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ABSTRACT

During 1968, Michigan State University developed a basic model and initial curriculum for the Behavioral Science Teacher Education Program (ED 027 285-ED 027 287), emphasizing the developmental experiences through the first years of teaching. This feasibility study was designed to analyze the human, material, and fiscal resources required to implement BSTEP, examine related issues, specify alternate solutions, explore various alternatives, and recommend a feasible operational model. The introduction provides an overview of the project, and section two details the nature and scope of program development. Other chapters deal with program development design and the five major curriculum areas, with outlines of the personnel and materials required for initial development, prototype testing, redevelopment, and continuous evaluation. The third section explores the relevance of the program, considers the impact of a changing society on the program and student attitudes, and analyzes the orientation and inservice needs of the faculty. The fourth section deals with administrative and management structure, including student selection and retention, grading practices, and advisement. The fifth section projects a budget for the 5-year period. (Author/MBM)

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Feasibility Study
Behavioral Science Teacher Education Program

College of Education
College of Home Economics
College of Arts and Letters
College of Communication Arts
College of Natural Science
College of Social Science
University College

MICHIGAN STATE UNIVERSITY
East Lansing, Michigan
December 31, 1969

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Abstract

FEASIBILITY STUDY OF THE BEHAVIORAL SCIENCE TEACHER EDUCATION PROGRAM

During 1968, Michigan State University developed a basic model and initial curriculum for the Behavioral Science Teacher Education Program.[1] BSTEP emphasizes developmental experiences which begin in a prospective teacher's freshman year of college and extend throughout preservice education into the initial years of teaching. The program encompasses the content and modes of inquiry of the behavioral sciences, performance criteria, personalized education, single-purpose modular descriptions, and a full year of internship.

This Feasibility Study was designed to analyze the human, material and fiscal resources required to implement BSTEP. Its objectives were to examine various issues related to program implementation, to specify alternate solutions, to explore and weigh the relative merits of various alternatives, and finally to recommend a feasible operational model. Based upon the data garnered, intelligent decisions could be made relative to program options and cost indices.

An introductory section of the report provides an overview of the entire project, while Section II examines in detail the nature and scope of program development. Following a chapter on program development design, the section explores each of the five major curriculum areas: General-Liberal Education, Scholarly Modes of Knowledge, Professional Use of Knowledge, Human Learning, and Clinical Experiences. The personnel and materials required for initial development, prototype testing, redevelopment, and continuous evaluation are outlined. A minimum of three testing and redevelopment periods are specified for each program component. The Instructional Resources Support System promotes the use of educational technology in the total process.

Maintaining the relevancy of the program undergirds the total endeavor, but is particularly explored in a third section. In one chapter, the potentialities of a changing society are considered in their impact on the program and on student attitude. A second chapter analyzes the orientation and in-service needs for BSTEP faculty.

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[1] Michigan State University, Behavioral Science Teacher Education Program, Volumes I, II, and III (East Lansing, Michigan: Michigan State University) 2000 p., USOE grant, Contract No. OEC-0-9-320424-4042.

An administrative and management structure is the focus of the fourth section, including organization and administration, benefit/cost analysis system, and information retrieval. Student selection and retention, grading practices, and advisement are included. Systems analysis procedures, including PERT, are utilized and projected. Finally, a budget for the five year period, including a built-in inflation index, is projected in a fifth section.

While the study focuses on the feasibility of BSTEP at MSU, the explication of several solution paths may broaden its usefulness to other colleges and universities.

SECTION I

PROJECT OVERVIEW

Behavioral Science Teacher Education Program

MICHIGAN STATE UNIVERSITY

1969

Chapter 1

DESIGN AND OVERVIEW OF THE PROJECT

This report delineates the second stage of a project to develop a model teacher education program. During Phase I Michigan State University developed a basic model and initial curriculum for the Behavioral Science Teacher Education Program.[1] BSTEP emphasizes developmental experiences which begin in a prospective teacher's freshman year of college and extend throughout preservice education into the initial years of teaching. The program encompasses content and modes of inquiry of the behavioral sciences, performance criteria, single-purpose modular descriptions, and a full year of internship.

The feasibility described in the present report was designed to analyze the human, material, and fiscal resources required to implement BSTEP. The objectives of the project were to examine various issues related to program implementation, to specify and explore relative merits of various alternative solutions and, finally, to recommend feasible operational models. Based upon the data garnered, intelligent decisions could be made relative to program options and cost indices. While the primary focus of this study has been to test the feasibility of BSTEP at Michigan State University, the explication of the several solution paths makes the general approach potentially applicable to other institutions, particularly to large multi-facet universities.

THE BSTEP MODEL

An extremely brief overview of BSTEP is provided on the following pages to serve as a basis for studying this report.

---

[1] Michigan State University, Behavioral Science Teacher Education Program, Volumes I, II, and III (East Lansing, Michigan: Michigan State University) 2000 p., under a grant from USOE, Contract No. OEC-0-9-320424-4042 (010).

Objectives

The Behavioral Science Teacher Education Program (BSTEP) is designed to achieve three major goals.

1. Development of a new kind of elementary school teacher who is basically well-educated, engages in teaching as clinical practice, is an effective student of the capacities and environmental characteristics of human learning, and functions as a responsible agent of social change

2. Systematic use of research and clinical experience in decision-making processes at all levels

3. A new laboratory and clinical base, from the behavioral sciences, on which to found undergraduate and in-service teacher education programs, and recycle evaluations of teaching tools and performance

Rationale

BSTEP provides the elementary school teacher with particular sets of behavior and mental processes, to function as a practitioner specifically trained to give comprehensive aid to a client. Such a teacher seeks to improve his own skills and increase his own knowledge by using his client or pupil-related experiences, gained at teacher education institutions in class periods and in simulated laboratory experiences, in field experiences and extended internship in actual elementary schools, and in post-graduate leadership and specialization training in a university-school network.

Clinical behavioral style permeates every phase of the program. Prospective teachers are trained so that they employ it; university professors practice it; and the program itself regenerates through the clinical process. Clinical experiences, as defined in BSTEP, are:

1. Client related

2. Include manipulation of instructional varibles

3. Include the element of feedback so that improved instruction occurs.

The above three elements interact to give clinical a connotation which is greater than the sum of its parts.

The BSTEP teacher is expected to learn from experience through a cyclical style of describing, analyzing, hypothesizing, prescribing, treating, and observing consequences. The last activity, observing consequences of the treatment administered, in turn leads to the first, describing the changed situations, to begin a new cycle. The feedback from the iterative design is used to improve his practitioner skills and knowledge, and to better fill the needs of the client-pupil. This is graphically illustrated in Figure 1:1.

To facilitate such a style, the curriculum-experience content of each section of the Program is designed in single-purpose, flexible modules which can be individually revised, replaced, eliminated, or expanded, as evaluation dictates.

The Program is a major milestone in the investment of the MSU College of Education since 1962 in a series of studies designed to increase the relationship between teacher education and behavioral sciences.

The term behavioral science is used in its eclectic sense, cutting across a variety of established disciplines to denote those aspects that contribute basic empirical knowledge about the activities and values of man. Some of the disciplines of special import in a clinical behavioral style of teacher education are psychology, sociology, anthropology, political science, economics and various sub-disciplines such as cognitive development, psychology of learning, social psychology, cultural anthropology, linguistics and communications.

The Program is designed to focus the skills and knowledge of behavioral scientists on educational problems, translating research into viable programs for preservice and in-service teachers. The traditional concept of research as theory is not discarded, but the emphasis is shifted to a form of practical action-research in classrooms, laboratory and field experiences.

New stategies in BSTEP include the use of a university-elementary schools network; an information retrieval system and other technological developments to ensure the professionalism of education at all levels; development of team-teaching, specialist and leadership programs for teachers showing special potentials; and sharper delineation of elementary school programs for pre-school, primary grades and middle school grades.

Curriculum Design

The Program extends through five sections of undergraduate and one section of postgraduate teacher education, on and off campus.

An initial 2,700 single-purpose modules are delineated to provide explicit experience instruction in the undergraduate sections.

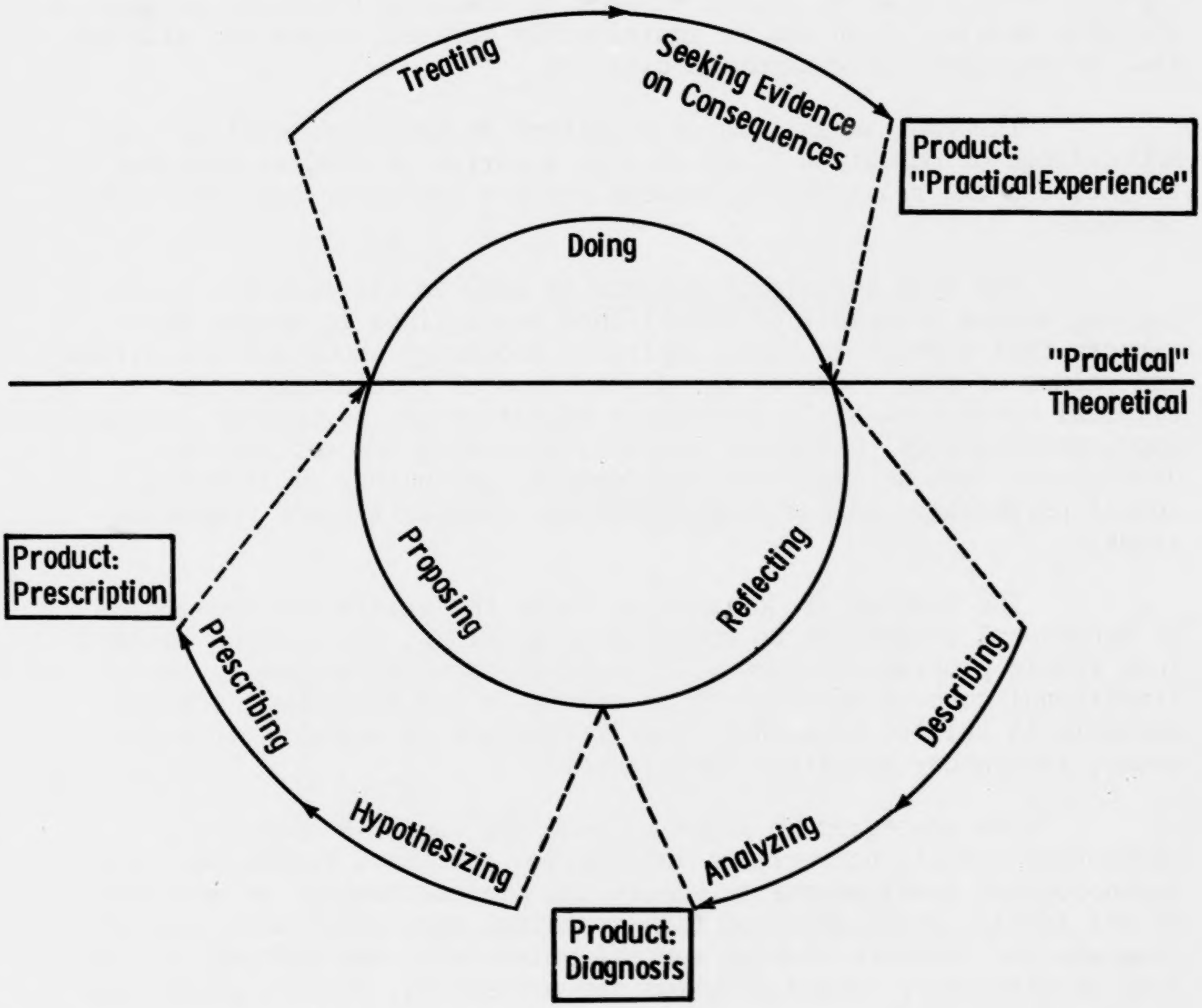

Treating
Seeking Evidence on Consequences
Product: "Practical Experience"
Doing
"Practical"
Theoretical
Proposing
Reflecting
Product: Prescription
Prescribing
Describing
Hypothesizing
Analyzing
Product: Diagnosis

Figure 1:1 Clinical Behavior Style

The modules are presented in narrative form on data cards and stored in a specially-designed information retrieval system. They can be retrieved on cards, computer tape or printout, according to the need of the implementing institution. One of the modules is reproduced here.

Each module is prepared, in terms of objectives, prerequisites, nature of the experience, the setting, materials required, evaluation procedures, and file key words for retrieval purposes.

The modules in BSTEP components[2] are grouped in clusters for purposes of administration and communication but can be varied and regrouped as needs vary.

In BSTEP the undergraduate program of each student includes:

1. A broad, basic core of general-liberal education

2. A study of human learning based upon behavioral science concepts and research

3. An analytical study of the teaching act in differing types of educational environments

4. A review of the fields of knowledge in terms of their structure and content, stressing concepts and sequence in developing disciplines with emphasis on the methods of inquiry and learning characterizing modes of scholarly endeavor in different disciplines

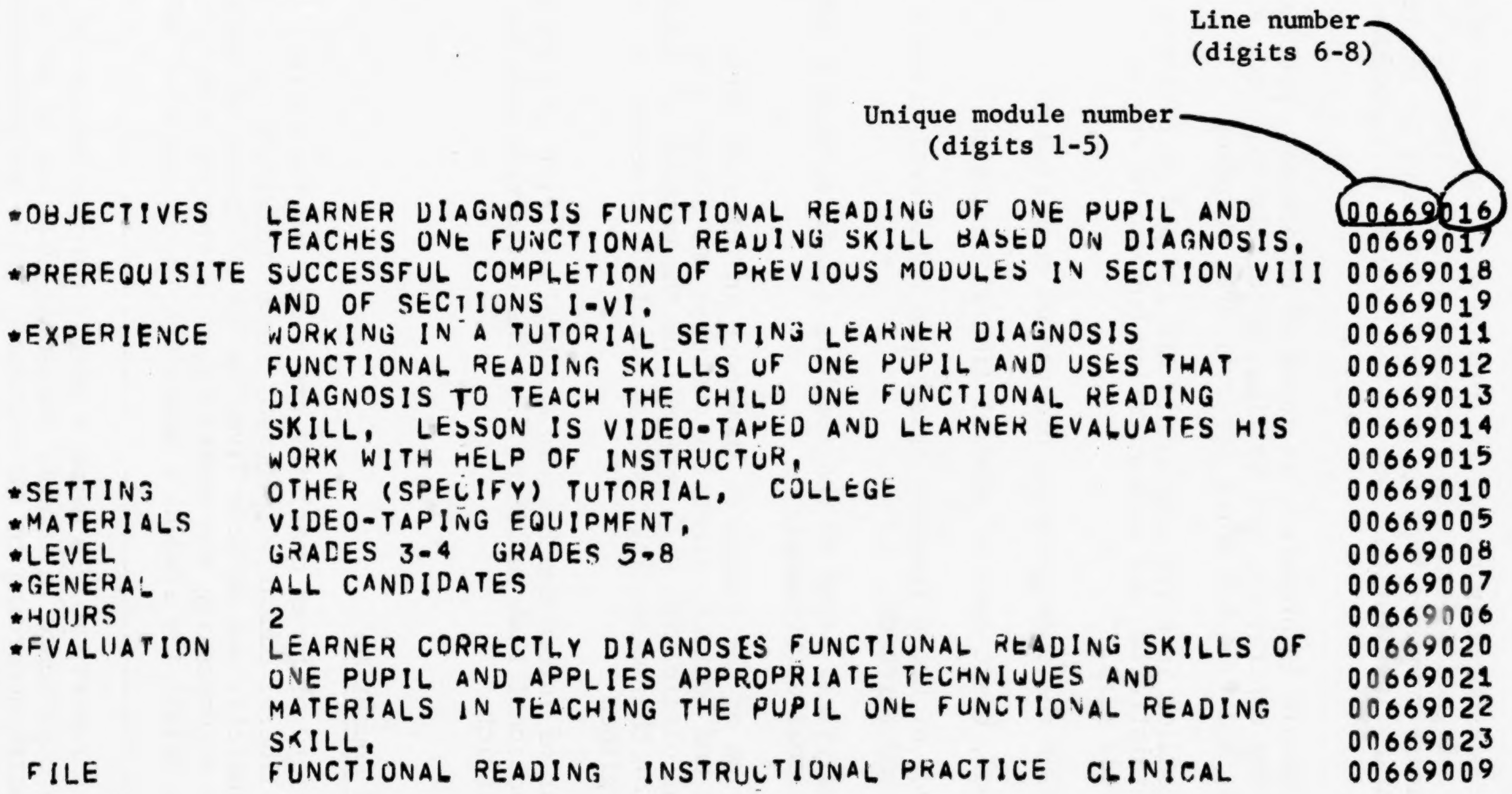
5. A year of intern teaching in a school district as part of an instructional team recruited from the university and the local district

General-Liberal Education

A variety of human qualities are sought in the citizen-teacher in the general-liberal education program, since individuals live and flourish in a society, and society lives by the qualities of individuals within it. The encompassing and overriding objective of general-liberal education is to relate the student's knowledge to the study of human

---

[2] Throughout this report, module means a single-purpose design for a single learning experience in teacher education that can be individually added or subtracted according to instructional needs and presented in narrative form on a data card. A component is a curriculum unit which comprises both cognitive and affective domains in its content and intent and is composed of a cluster of interrelated modules.



Line number
(digits 6-8)

Unique module number
(digits 1-5)

```
*OBJECTIVES    LEARNER DIAGNOSIS FUNCTIONAL READING OF ONE PUPIL AND       00669016
               TEACHES ONE FUNCTIONAL READING SKILL BASED ON DIAGNOSIS.   00669017
*PREREQUISITE  SUCCESSFUL COMPLETION OF PREVIOUS MODULES IN SECTION VIII  00669018
               AND OF SECTIONS I-VI.                                      00669019
*EXPERIENCE    WORKING IN A TUTORIAL SETTING LEARNER DIAGNOSIS            00669011
               FUNCTIONAL READING SKILLS OF ONE PUPIL AND USES THAT       00669012
               DIAGNOSIS TO TEACH THE CHILD ONE FUNCTIONAL READING        00669013
               SKILL, LESSON IS VIDEO-TAPED AND LEARNER EVALUATES HIS     00669014
               WORK WITH HELP OF INSTRUCTOR,                              00669015
*SETTING       OTHER (SPECIFY) TUTORIAL,  COLLEGE                         00669010
*MATERIALS     VIDEO-TAPING EQUIPMENT,                                    00669005
*LEVEL         GRADES 3-4  GRADES 5-8                                     00669008
*GENERAL       ALL CANDIDATES                                             00669007
*HOURS         2                                                          00669006
*EVALUATION    LEARNER CORRECTLY DIAGNOSES FUNCTIONAL READING SKILLS OF   00669020
               ONE PUPIL AND APPLIES APPROPRIATE TECHNIQUES AND           00669021
               MATERIALS IN TEACHING THE PUPIL ONE FUNCTIONAL READING     00669022
               SKILL.                                                     00669023
 FILE          FUNCTIONAL READING  INSTRUCTIONAL PRACTICE  CLINICAL       00669009
```

Level -- For pre-school teachers; grades 1-4; grades 5-8; all candidates

General -- General Classroom Teacher, Subject Specialist or both

Hours -- Approximate time for student to complete experience

File -- Index terms under which this module filed

Figure 1:2 Reproduction of Module

behavior. Rather than providing a series of survey courses, BSTEP proposes a basic core of general-liberal education experience which emphasizes the contributions the various disciplines of liberal arts and sciences make to an understanding of man, his behavior, his ideas, his society, and his world.

The humanities are designed to promote an understanding of human behavior in humanistic terms. After exploring the way a writer writes, an artist designs, and a musician composes, the student explores issues of Western man; the question of values, classical works of the West in literature, art and music; and the American Quest as demonstrated in major themes of cultural history. Through study of African, Indian, and East Asian cultures and history, students are exposed to non-Western thought and values, thus sensitizing them to their own backgrounds and inherent cultural biases. This is one of a series of experiences designed for understanding by prospective teachers of alternate social, political and economic value systems.

Social Science covers the nature and rationale of the disciplines of geography, anthropology, sociology, political science, and economics. Through a carefully structured sequence of experiences, the decision-making of social scientists are explored and students are provided opportunities to employ these decision-making processes in real and simulated situations.

Natural Science and Mathematics components are designed to examine science as a process, and its effect on cultures and individuals.

Scholarly Modes of Knowledge

The Scholarly Modes of Knowledge open the door to disciplined inquiry into those areas of knowledge related to elementary school curriculum. Underlying structures of disciplines, and techniques for solving problems are examined. The Scholarly Modes of Knowledge dovetail with both General-Liberal Education and Professional Use of Knowledge.

Linguistics introduces the prospective teacher to basic goals, assumptions and procedures of inquiry into the nature of language and the results of contemporary research in the linguistic system of English. Phonology, morphology, semantics, syntax and social dialects of American English are examined in the modules of experience. A sense of progression in the field is provided.

The Communication Process serves to identify and analyze behavioral patterns and channels of communications between and among teachers, parents and pupils. Skills in initiating and directing role-playing are developed to increase sensitivity and perception.

Simulation games are included for training in communication skills as leaders or agents of social change.

Literature for Children identifies the effective types of fiction and non-fiction that support the elementary school program. Work of pace-setting authors and illustrators are examined, and a love of books encouraged in education students and elementary pupils. Use of non-print media such as films, tape recordings and slides are included.

Fine Arts modes are visual, aural and motor, and these are examined in studio investigations, field trips and readings. Perception and creativity are promoted in art, music, and dance and drama.

In Social Science, the Scholarly Modes center on the structure of the social world, conflict and decision-making, in relation to the individual and educational institutions. Systematic thinking, methodological sophistication and empathetic responses are fostered. In the structure of the social, political and economic world, consequences of stress such as mass movements, mass violence, deterrents and escalation are examined, and the correctives to be found in bargaining and group integration.

Elementary Science modes involve examination of properties of matter, classifications, interaction, life cycles, and energy relations.

Mathematics content and method of approach are dictated by the elementary curriculum. The foundations of arithmetic, algebra, and geometry are studied in mathematics laboratories.

Professional Use of Knowledge

The prospective teacher's knowledge in curriculum areas, scholarly modes and human behavior are translated into instructional strategies fitted to conditions of environment, pupil characteristics, and available approaches.

Reading is examined in great detail, using 240 initial modules arranged in eight clusters, in recognition of the basic importance of reading skills. The nature of reading, word recognition, comprehension, flexibility of rate, individual differences and organization, approaches to reading instruction, specialization according to age groups, and an intern seminar in reading instruction are included.

Language Arts are promoted to aid the teacher to help children develop effective habits and skills in communication. Techniques of observation, mass communications, facility with language, use of language arts tools and sound instructional and evaluation strategies are examined.

Professional Use of Social Science examines the new curriculum developments of the 1960's bringing Social Science and Social Studies closer to reality by integrating them and applying disciplines to human phenomena. Citizenship, conflict,welfare of individuals and society and the forces impinging on them, decision-making, and interrelationships are studied.

In Elementary Science, scientific inquiry, technological cognition, personal and professional philosophies are probed in laboratory-centered experience modules.

Professional Use of Mathematical knowledge relates content and setting to the psychological and social variables affecting the learning potential of pupils.

Clinical Experiences

Extending through four years of teacher education, the Clinical Experiences undergraduate program includes an initial Exploring Teaching Experience and a concluding year's internship in a Clinic-School Network operated by the university, elementary schools and other educational agencies. Exploring Teaching includes tutoring fellow students, assistant-teaching and experiences with children in school and non-school settings. Career-Decision Experiences are initiated during the first year, but the choices are continually refined throughout the program. Analytical Study of Teaching also permeates the total program, with changing emphases each year. This facet includes simulated exercises, small group discussions, and individual explorations on the university campus. It also includes field experiences for community understanding, including socio-economic make-up, physical school plant, political influences, organization and administration, and human resources. The pre-internship practicum during the third year leads to the full-year internship during the last year.

Simulated laboratory experiences are conducted on campus in the Interpersonal Process Recall (IPR) phase, using video technology to increase self-awareness as individuals and as prospective practitioners. Visual and aural feedback aid the student to improve skills and sensitivity.

The entire fourth year is spent in internship within the Clinic-School Network, in a program comparable to the MSU Elementary Intern Program (EIP) in operation for the past nine years. The Network staff includes one intern consultant for each five or six interns, with other university and school resources supporting internship.

Human Learning

More than 300 single-purpose modules arranged in five clusters already are provided as means of educating prospective teachers and graduates in aspects of human learning. Growth and development of the preschool child, educational psychology, and the social and philosophical foundations of education are examined by the undergraduate. Advanced study is proposed, for graduates, in educational psychology and the social and philosophical foundations. The specific contributions of behavioral sciences are focused upon in Human Learning, supported by experiences throughout the program.

Continued Professional Development

Within the Clinic-School Network, continued improvement beyond preservice education is structured through resourced teaching and toward professional instructional roles for highly capable leaders. The educational media specialist is described as an example of advanced specialization and leadership. The training of an Associate Teacher, as an example of auxiliary personnel who may be available in the school community, also is discussed.

The Clinic-School Network is a coordinated, integrated system which uses educational, community and state agency resources to develop individual focus of experience for the prospective teacher, from the first commitment as an undergraduate. However, experience is also drawn from community contact, policy making bodies, and parents.

Resourced teaching features the use of professional instructional leaders, seminars and evaluations to systematically improve teaching skills beyond internship.

The professional instructional leader is a catalyst in the Clinic-School Network, further developing and refining staff use of the clinical stance and improving pupil instructional materials and techniques. Roles envisioned for these people include team leaders, intern consultants, curriculum developers, or elementary principals.

Special features of the BSTEP model include:

1. BSTEP is a comprehensive program involving all aspects of the preservice teacher's curriculum, not just the professional education phase. Articulation of general-liberal education and professional education experiences is vital in making a major change in preparation programs.

2. The program is explicitly described in single purpose modules.

3. The modular approach permits ready evaluation of individual components and sequence change and modifications.

4. Cross-cultural studies are included to sensitize prospective and in-service teachers to unfamiliar cultures and to enable them to recognize and appreciate the varying postures of peoples of other cultures within our own country, as well those in other nations.

5. The resources of an educational network of cooperating institutions are utilized to maximum advantage.

6. The completion of the program is determined by performance-based criteria rather than time-based criteria.

7. Three evaluation check points, designed to examine the questions of continuation and progression in performance terms, are included for students. These points occur during the initial Career Decision experience, at entry to, and exit from Internship.

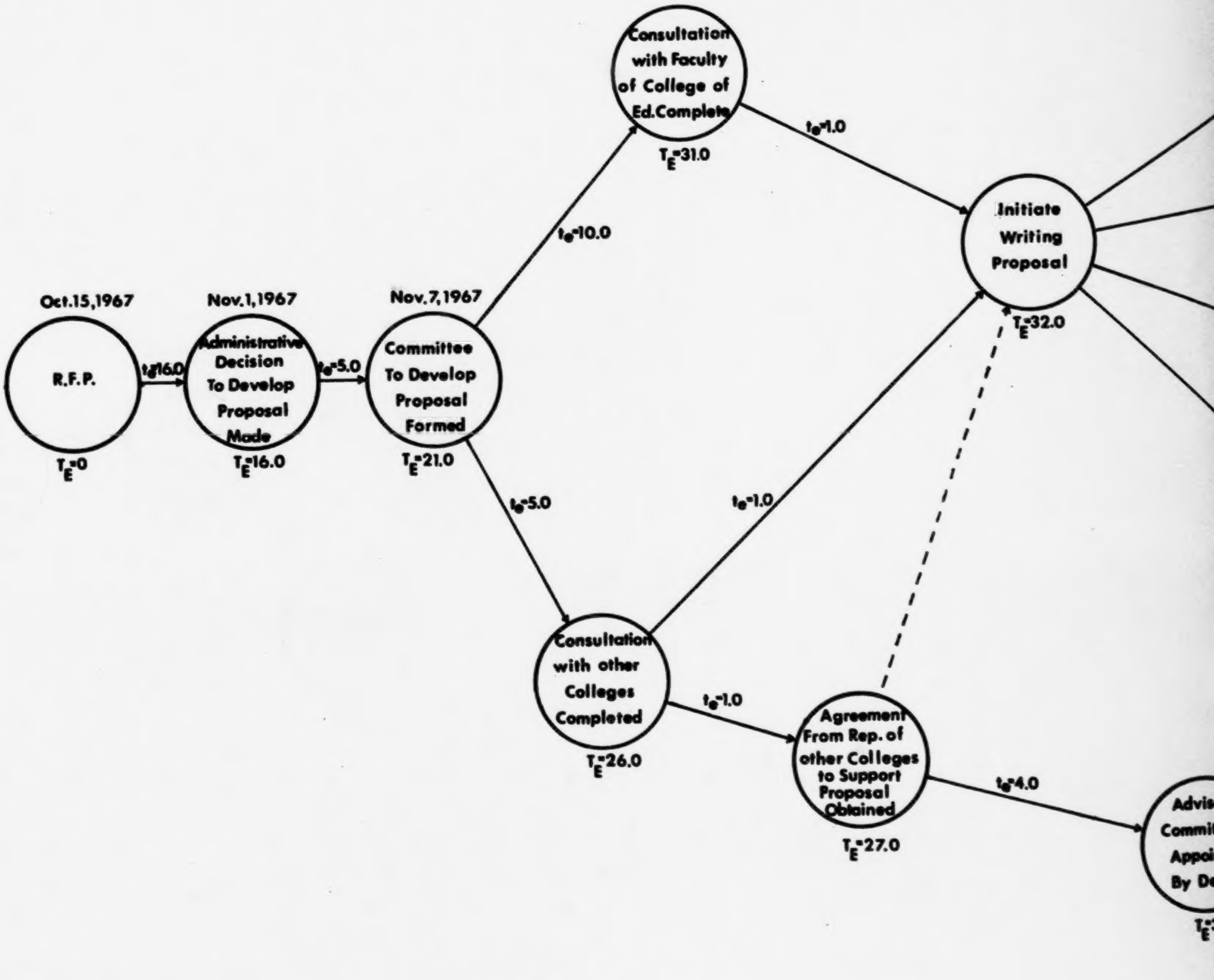
8. Information retrieval system is designed to promote ready change in the program, access to descriptions of curricular components, and analysis of the total program for students.

The above brief description serves to introduce the reader to the general context of the BSTEP model as it was described in Phase I of this series of projects. It is not sufficient for understanding the ramifications and implications of the present recommendations. Because the current feasibilty study is based upon the three-volume Phase I "report, and" a thorough familiarity with that report is necessary for comprehending the nuances of the present recommendations, the study team has assumed that readers of this report are knowledgeable about Phase I.

Development of the BSTEP Program

In response to a request from the United States Office of Education, Bureau of Research, October 15, 1967, for a proposal of an elementary teacher preparation program, Michigan State University began marshalling its resources into an extensive professional team. The procedures employed, and their timing and sequence in developing that proposal, are graphically illustrated in PERT chart 1:1 on the following page.

PERT - BSTEP-MODEL PROPOSAL SUBMISSION


Oct.15,1967
R.F.P.
T_E=0
t_e=16.0
Nov.1,1967
Administrative Decision To Develop Proposal Made
T_E=16.0
t_e=5.0
Nov.7,1967
Committee To Develop Proposal Formed
T_E=21.0
t_e=10.0
Consultation with Faculty of College of Ed.Complete
T_E=31.0
t_e=1.0
Initiate Writing Proposal
T_E=32.0
t_e=5.0
Consultation with other Colleges Completed
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t_e=1.0
Agreement From Rep. of other Colleges to Support Proposal Obtained
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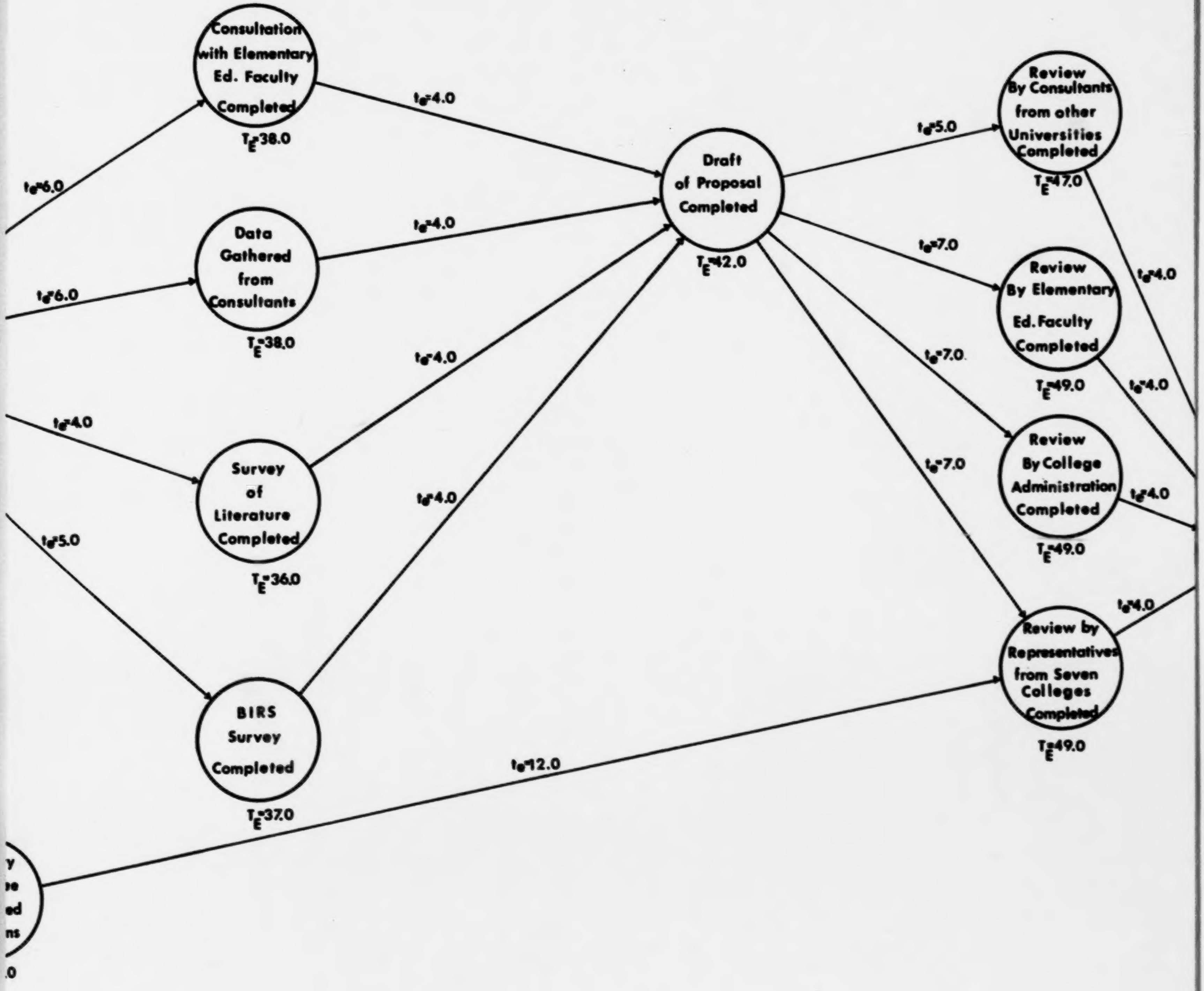
t_e=4.0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Data Gathered from Consultants
T_E=38.0
Survey of Literature Completed
T_E=36.0
BIRS Survey Completed
T_E=37.0
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re
ed
ns
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t_e=4.0
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Draft of Proposal Completed
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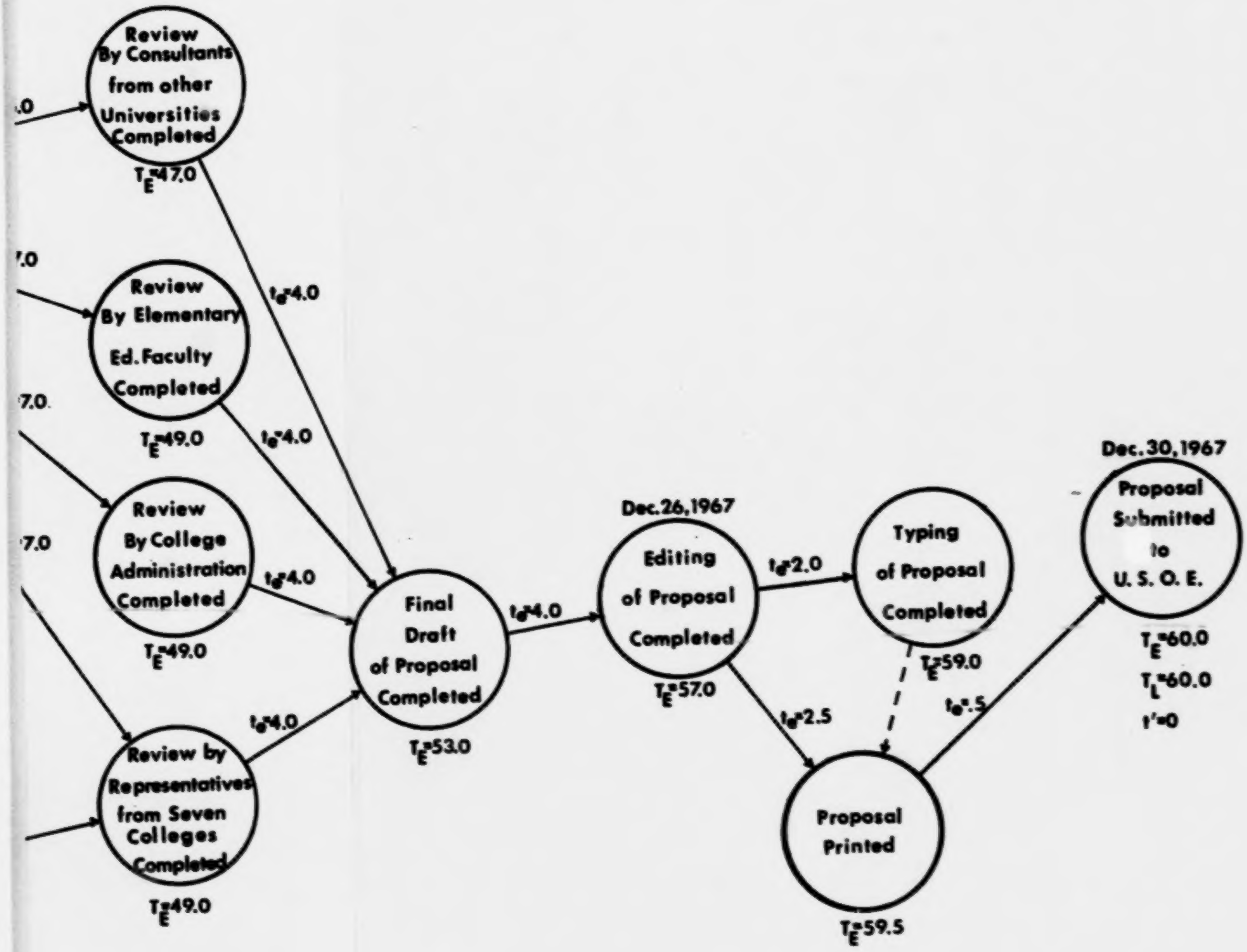
t_e=5.0
t_e=7.0
t_e=7.0
t_e=7.0
Review By Consultants from other Universities Completed
T_E=47.0
Review By Elementary Ed. Faculty Completed
T_E=49.0
Review By College Administration Completed
T_E=49.0
Review by Representatives from Seven Colleges Completed
T_E=49.0
t_e=4.0
t_e=4.0
t_e=4.0
t_e=4.0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Review By Consultants from other Universities Completed
T_E=47.0
7.0
Review By Elementary Ed. Faculty Completed
T_E=49.0
7.0
Review By College Administration Completed
T_E=49.0
7.0
Review by Representatives from Seven Colleges Completed
T_E=49.0
t_e=4.0
t_e=4.0
t_e=4.0
t_e=4.0
Final Draft of Proposal Completed
T_E=53.0
t_e=4.0
Dec.26,1967
Editing of Proposal Completed
T_E=57.0
t_e=2.0
Typing of Proposal Completed
T_E=59.0
t_e=2.5
Proposal Printed
T_E=59.5
t_e=.5
Dec.30,1967
Proposal Submitted to U. S. O. E.
T_E=60.0
T_L=60.0
t'=0

PERT Chart 1:1 Model Proposal Submission

The proposal for the Behavioral Science Teacher Education Program (BSTEP) was submitted on December 31, 1967, awarded and funded March 1, 1968 and work was begun to establish the nature, curriculum-experience content, and structure of the program.

More than 150 professional people, the majority of them faculty and administrative personnel within MSU, contributed their time, effort and expertise to the development of the model. Theoretical constructs were transformed into working models, explicit instructional modules, packages and patterns. The coordinated effort brought together educators, scientists, scholars and administrators from seven MSU colleges: Arts and Letters, Communication Arts, Education, Home Economics, Natural Science, Social Science and the University College.

Dr. John E. Ivey, Jr., dean of the College of Education, served as chairman of the Educational Policies Council, comprising the deans of the seven colleges. Their duties included deliberation on policy matters, senior staff involvement and guidance of the program's development.

A Project Advisory Committee, composed of faculty representatives from participating MSU colleges, advised the Project Staff. Dr. William V. Hicks, chairman of the Department of Elementary and Special Education, served as committee chairman.

The Project Director, Dr. W. Robert Houston, professor and director of the Elementary Intern Program, headed the project staff in development of the plan and writing of the Final Report. The project staff was organized into seven working teams, each guided by a senior faculty member and given responsibilities in Humanities, Social Science, Natural Science, Human Learning, Professional Use of Knowledge, Clinical Experiences, and Continued Professional Growth.

The directors of three of MSU's functioning institutes (the Science-Mathematics Teaching Center, Social Science Teaching Institute, and Humanities Teaching Institute) coordinated the development of sections covering General-Liberal Education, Scholarly Modes of Knowledge and Professional Use of Knowledge. Dr. Julian R. Brandou, director of the first institute, which is administered by the College of Natural Science and College of Education guided development of Natural Science and Mathematics. Dr. Daniel Jacobson, director of the second institute, which is administered by the College of Social Science, University College, and the College of Education, directed the Social Sciences. Dr. J. Bruce Burke, director of the third institute, administered by the College of Arts and Letters, University College, and the College of Education coordinated the Humanities.

Members of project teams were drawn from academic departments throughout MSU, other universities, several school districts and other educational agencies. The director of the Learning Systems Institute of MSU and the Human Learning Research Institute of MSU, Dr. Ted Ward, who has long been concerned with translation of educational objectives into clinical practice, coordinated the clinical component. Dr. Don Hamachek, associate professor of Educational Psychology and Child Development, coordinated the work of the behavioral scientists who prepared the section of Human Learning.

Working teams pooled their skills to insure unity in each area and in the whole project. An information retrieval system was used to compare and contrast offerings from the various components. Dr. Gary Smith, Wayne State University, coordinated the development of the Information Storage and Retrieval System. Team leaders met regularly to maintain project liaison.

A suite of offices including a conference room, nine faculty offices and a reception-typist office, was assigned to the project. The offices, in one of the living-learning centers on campus, were used by special staff on short assignments, by editorial and clerical staff, and by curriculum writers who requested office assignments. Other working team members used their regularly assigned offices. Keypunch machines were used in the project offices and in the MSU computer Center.

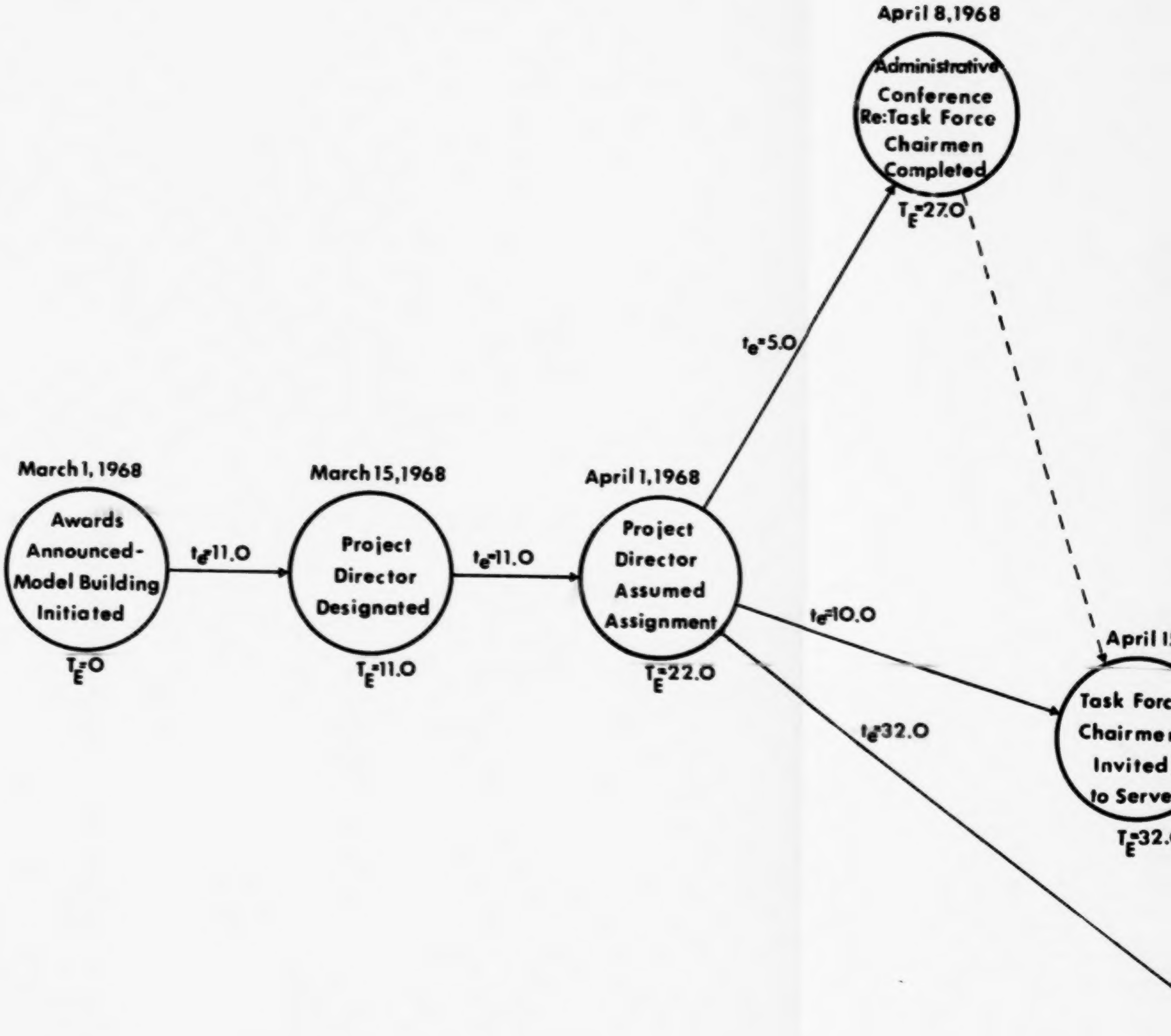
A standard instructional module format was prepared. At the time the Phase I Final Report was submitted to USOE, an initial 2,700 such modules had been prepared. Each was a single-purpose, explicit, experience module, presented in narrative form on data cards, to be stored in a specially designed informational retrieval system; and retrievable on data cards, on computer tape, or printout according to the needs of the implementing institution.

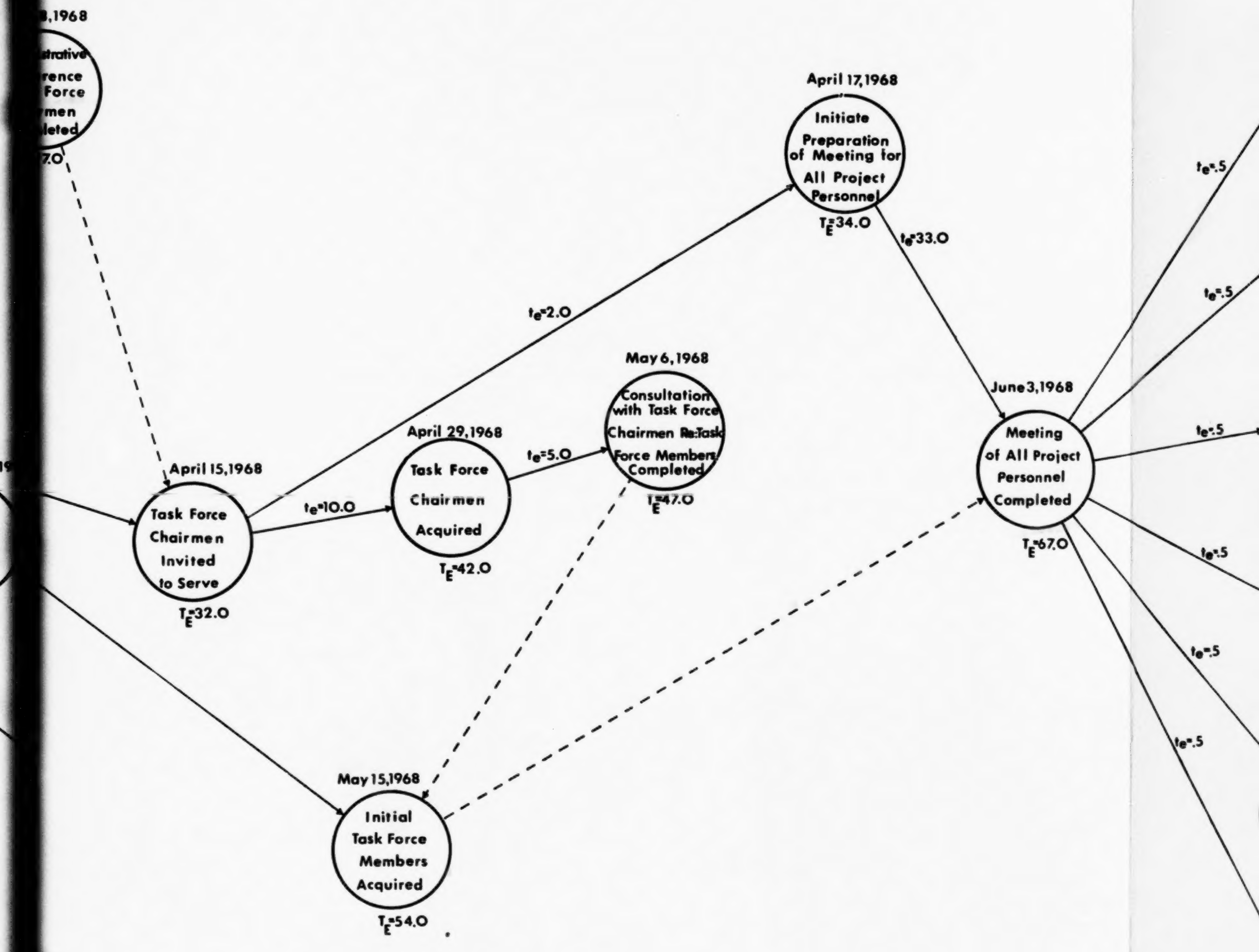
Clusters of flexibly sequenced modules were included for each area. For example, the General-Liberal Education area includes 81 pages of descriptions and bibliographies and 522 single-purpose modules arranged in 19 clusters; the majority in branches of Humanities, and the others in Social Sciences, and Natural Science and Mathematics.

The complete BSTEP, as outlined in the three-volume 2,000 page Final Report, is dominated by a clinical behavioral style, with curriculum-experience components of five undergraduate and one graduate areas, for preservice and in-service elementary teachers, and five functional subsystems of operational and supportive nature, in Management Planning, Program Development, Clinical Experience, Evaluation, and Information Retrieval.

The Final Report of Phase I was submitted to USOE October 31, 1968. PERT Charts 1:2, 1:3, 1:4, 1:5 of activities and dates for the development of the BSTEP model are found on the following pages. They succinctly illustrate the main aspects of procedures employed in developing the basic model.

PERT-BSTEP-MODEL BUILDING-TASK FORCES (SELECTED)


March 1, 1968
Awards Announced-Model Building Initiated
T=O E
t=11.O e
March 15,1968
Project Director Designated
T=11.O E
t=11.O e
April 1,1968
Project Director Assumed Assignment
T=22.O E
t=5.O e
April 8,1968
Administrative Conference Re:Task Force Chairmen Completed
T=27.O E
t=10.O e
t=32.O e
April 1
Task Forc Chairme Invited to Serve
T=32. E


8,1968
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rence
Force
men
leted
7.0
April 15,1968
Task Force Chairmen Invited to Serve
T_E=32.0
t_e=10.0
April 29,1968
Task Force Chairmen Acquired
T_E=42.0
t_e=5.0
May 6,1968
Consultation with Task Force Chairmen Re:Task Force Members Completed
T_E=47.0
t_e=2.0
April 17,1968
Initiate Preparation of Meeting for All Project Personnel
T_E=34.0
t_e=33.0
May 15,1968
Initial Task Force Members Acquired
T_E=54.0
June 3,1968
Meeting of All Project Personnel Completed
T_E=67.0
t_e=.5
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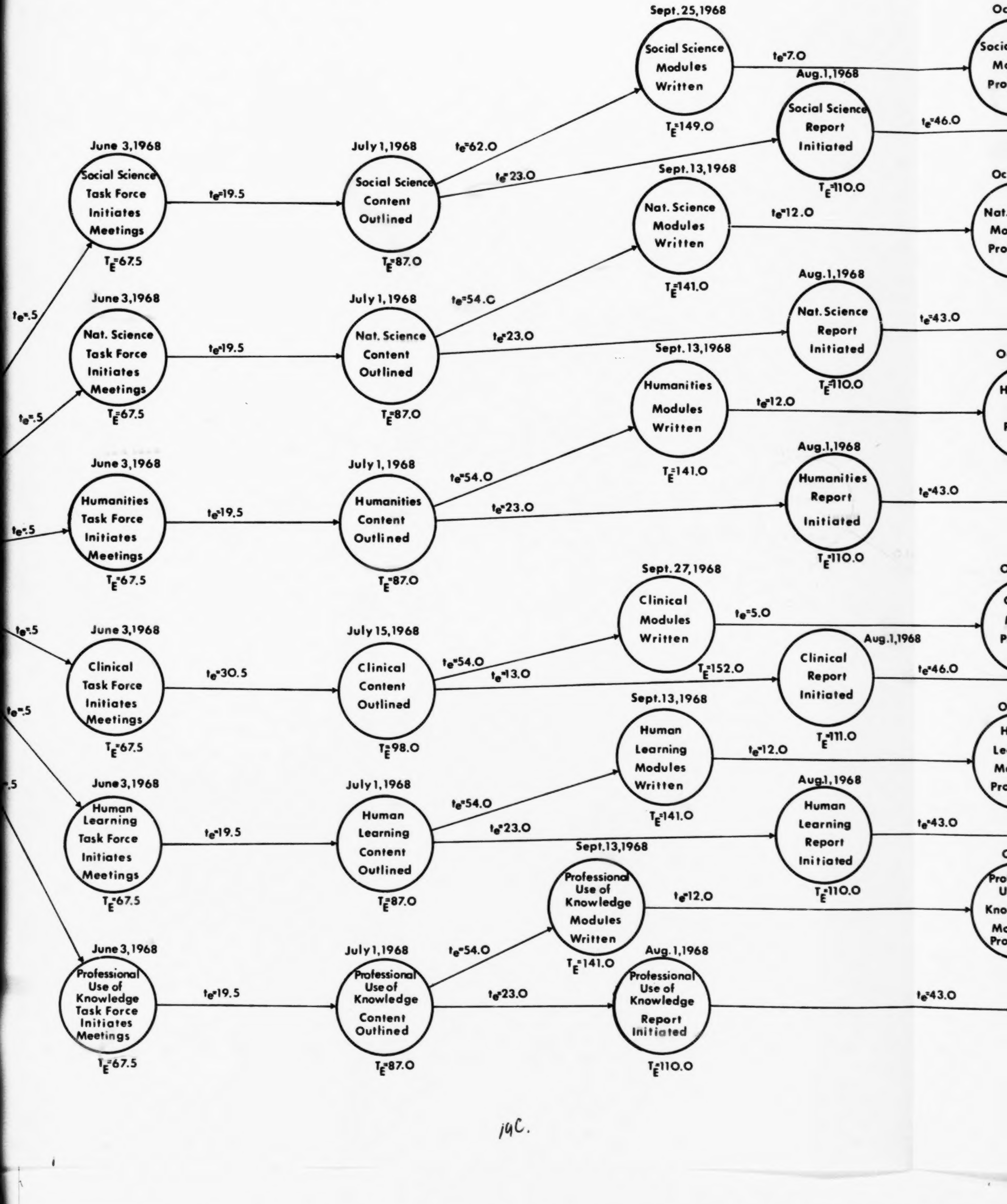
19


June 3,1968
Social Science Task Force Initiates Meetings
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June 3,1968
Nat. Science Task Force Initiates Meetings
T_E=67.5
June 3,1968
Humanities Task Force Initiates Meetings
T_E=67.5
June 3,1968
Clinical Task Force Initiates Meetings
T_E=67.5
June 3,1968
Human Learning Task Force Initiates Meetings
T_E=67.5
June 3,1968
Professional Use of Knowledge Task Force Initiates Meetings
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t_e=.5
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t_e=19.5
t_e=30.5
t_e=19.5
t_e=19.5
July 1,1968
Social Science Content Outlined
T_E=87.0
July 1,1968
Nat. Science Content Outlined
T_E=87.0
July 1,1968
Humanities Content Outlined
T_E=87.0
July 15,1968
Clinical Content Outlined
T_E=98.0
July 1,1968
Human Learning Content Outlined
T_E=87.0
July 1,1968
Professional Use of Knowledge Content Outlined
T_E=87.0
t_e=62.0
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t_e=54.0
t_e=13.0
t_e=54.0
t_e=23.0
t_e=54.0
t_e=23.0
Sept.25,1968
Social Science Modules Written
T_E=149.0
Aug.1,1968
Social Science Report Initiated
T_E=110.0
Sept.13,1968
Nat. Science Modules Written
T_E=141.0
Aug.1,1968
Nat. Science Report Initiated
T_E=110.0
Sept.13,1968
Humanities Modules Written
T_E=141.0
Aug.1,1968
Humanities Report Initiated
T_E=110.0
Sept.27,1968
Clinical Modules Written
T_E=152.0
Aug.1,1968
Clinical Report Initiated
T_E=111.0
Sept.13,1968
Human Learning Modules Written
T_E=141.0
Aug.1,1968
Human Learning Report Initiated
T_E=110.0
Sept.13,1968
Professional Use of Knowledge Modules Written
T_E=141.0
Aug.1,1968
Professional Use of Knowledge Report Initiated
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Oc
Socia
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Pro
Oc
Nat.
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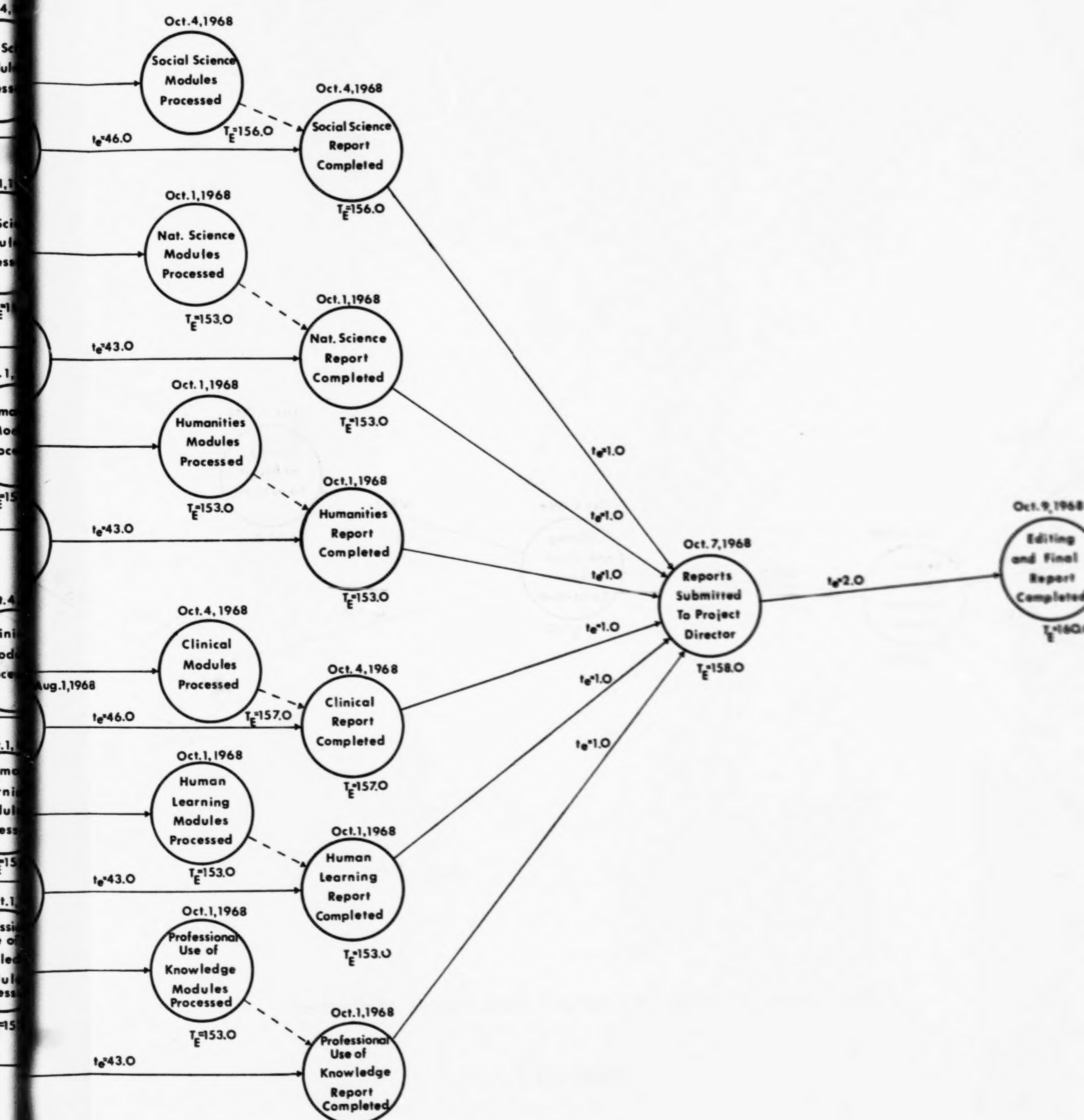
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Oct.4,1968
Social Science Report Completed
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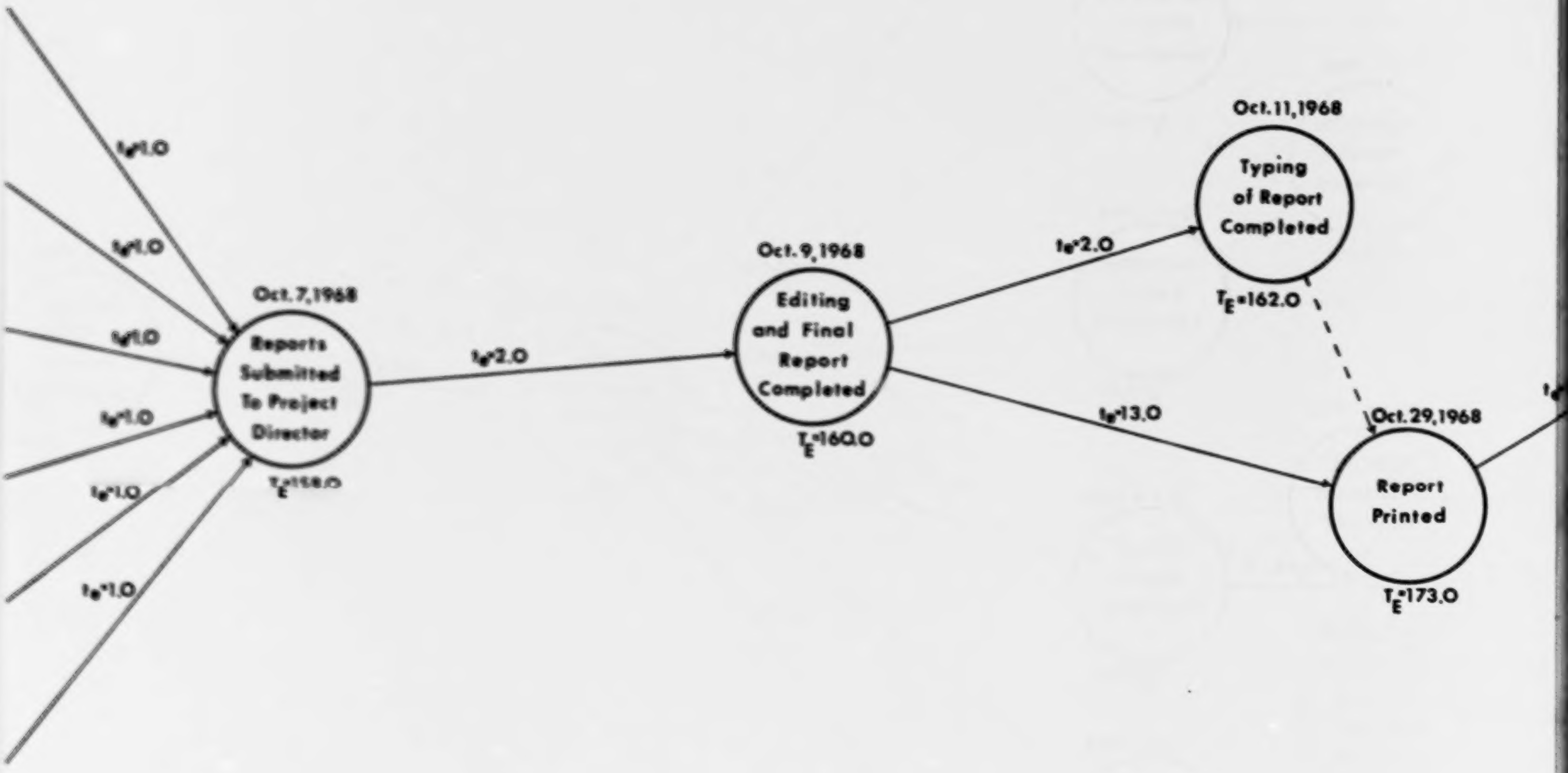
T_E=156.0
Oct.1,1968
Nat. Science Modules Processed
T_E=153.0
Oct.1,1968
Nat. Science Report Completed
t_e=43.0
T_E=153.0
Oct.1,1968
Humanities Modules Processed
T_E=153.0
Oct.1,1968
Humanities Report Completed
t_e=43.0
T_E=153.0
Oct.4, 1968
Clinical Modules Processed
Aug.1,1968
T_E=157.0
Oct.4,1968
Clinical Report Completed
t_e=46.0
T_E=157.0
Oct.1,1968
Human Learning Modules Processed
T_E=153.0
Oct.1,1968
Human Learning Report Completed
t_e=43.0
T_E=153.0
Oct.1,1968
Professional Use of Knowledge Modules Processed
T_E=153.0
Oct.1,1968
Professional Use of Knowledge Report Completed
t_e=43.0
T_E=153.0
t_e=1.0
t_e=1.0
t_e=1.0
t_e=1.0
t_e=1.0
t_e=1.0
Oct.7,1968
Reports Submitted To Project Director
T_E=158.0
t_e=2.0
Oct.9,1968
Editing and Final Report Completed
T_E=160.0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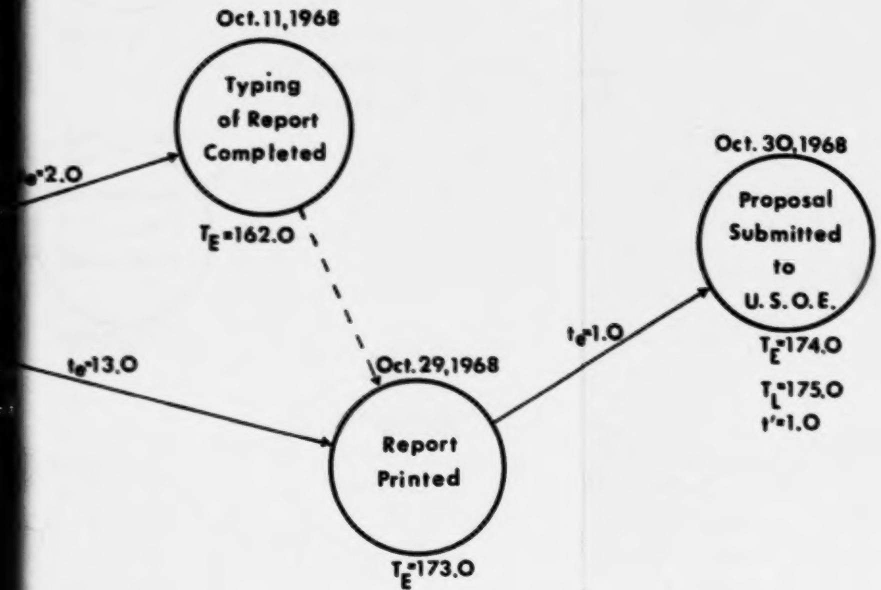
te=1.0
te=1.0
te=1.0
te=1.0
Oct. 7,1968
Reports Submitted To Project Director
TE=158.0
te=2.0
Oct. 9,1968
Editing and Final Report Completed
TE=160.0
te=2.0
Oct. 11,1968
Typing of Report Completed
TE=162.0
te=13.0
Oct. 29,1968
Report Printed
TE=173.0

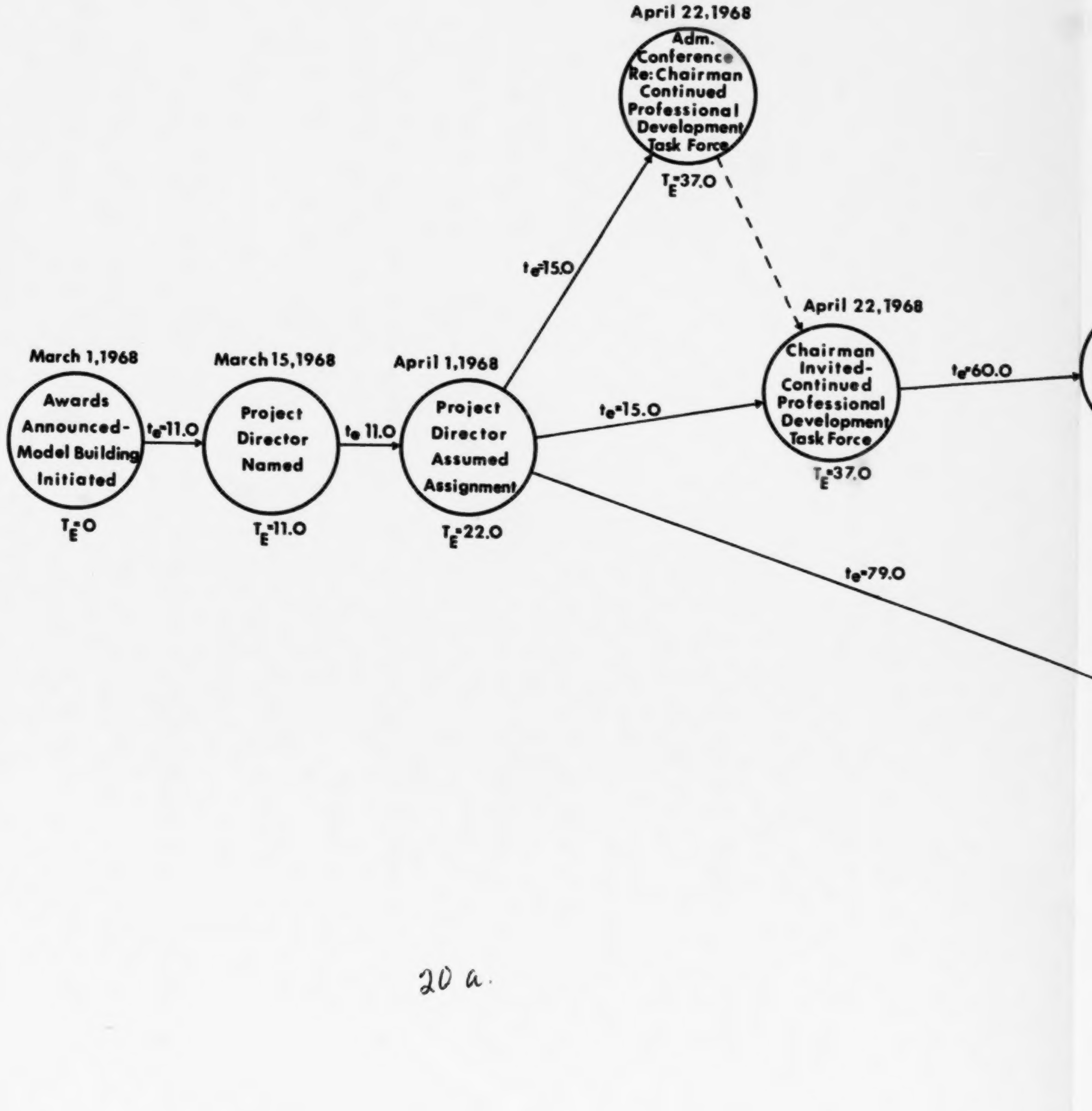
PERT Chart 1:2 Model Building - Task Forces (Selected)


Oct.11,1968
Typing of Report Completed
te=2.0
TE=162.0
te=13.0
Oct.29,1968
Report Printed
TE=173.0
te=1.0
Oct. 30,1968
Proposal Submitted to U. S. O. E.
TE=174.0
TL=175.0
t'=1.0

s (Selected)

PERT Chart 1:3 Model Building - Continued Professional Development Task Force

PERT-BSTEP - MODEL BUILDING - CONTINUED PROFESSIONAL DEVELOPMENT TASK FORC


April 22,1968
Adm. Conference Re: Chairman Continued Professional Development Task Force
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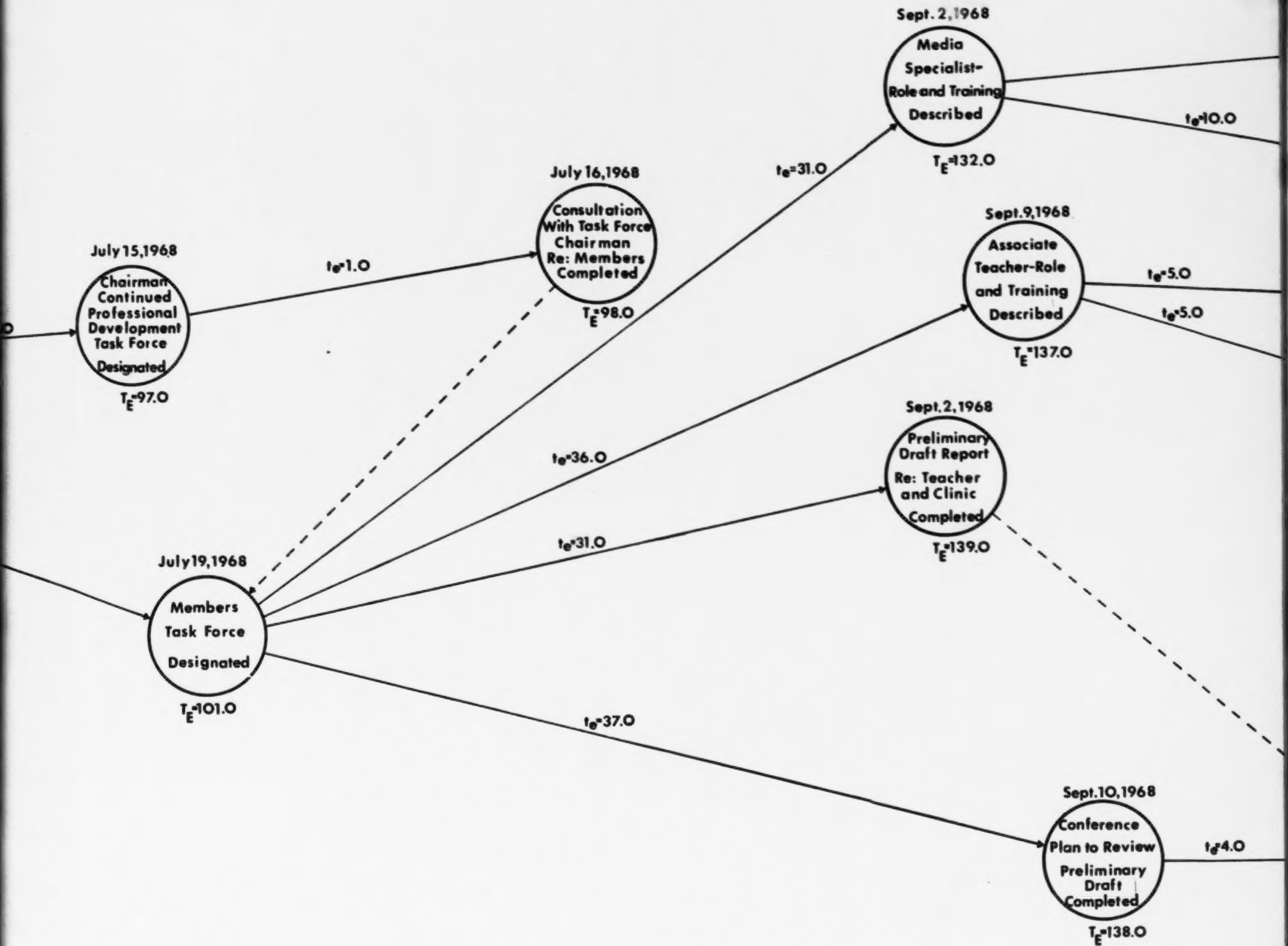
t_e=15.0
April 22,1968
March 1,1968
March 15,1968
April 1,1968
Awards Announced- Model Building Initiated
t_e=11.0
Project Director Named
t_e 11.0
Project Director Assumed Assignment
t_e=15.0
Chairman Invited- Continued Professional Development Task Force
t_e=60.0
T_E=0
T_E=11.0
T_E=22.0
T_E=37.0
t_e=79.0

K FORCE


July 15,1968
Chairman Continued Professional Development Task Force Designated
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t_e=1.0
July 16,1968
Consultation With Task Force Chairman Re: Members Completed
T_E=98.0
July 19,1968
Members Task Force Designated
T_E=101.0
t_e=31.0
Sept. 2,1968
Media Specialist-Role and Training Described
T_E=132.0
t_e=10.0
t_e=36.0
Sept. 9,1968
Associate Teacher-Role and Training Described
T_E=137.0
t_e=5.0
t_e=5.0
t_e=31.0
Sept. 2,1968
Preliminary Draft Report Re: Teacher and Clinic Completed
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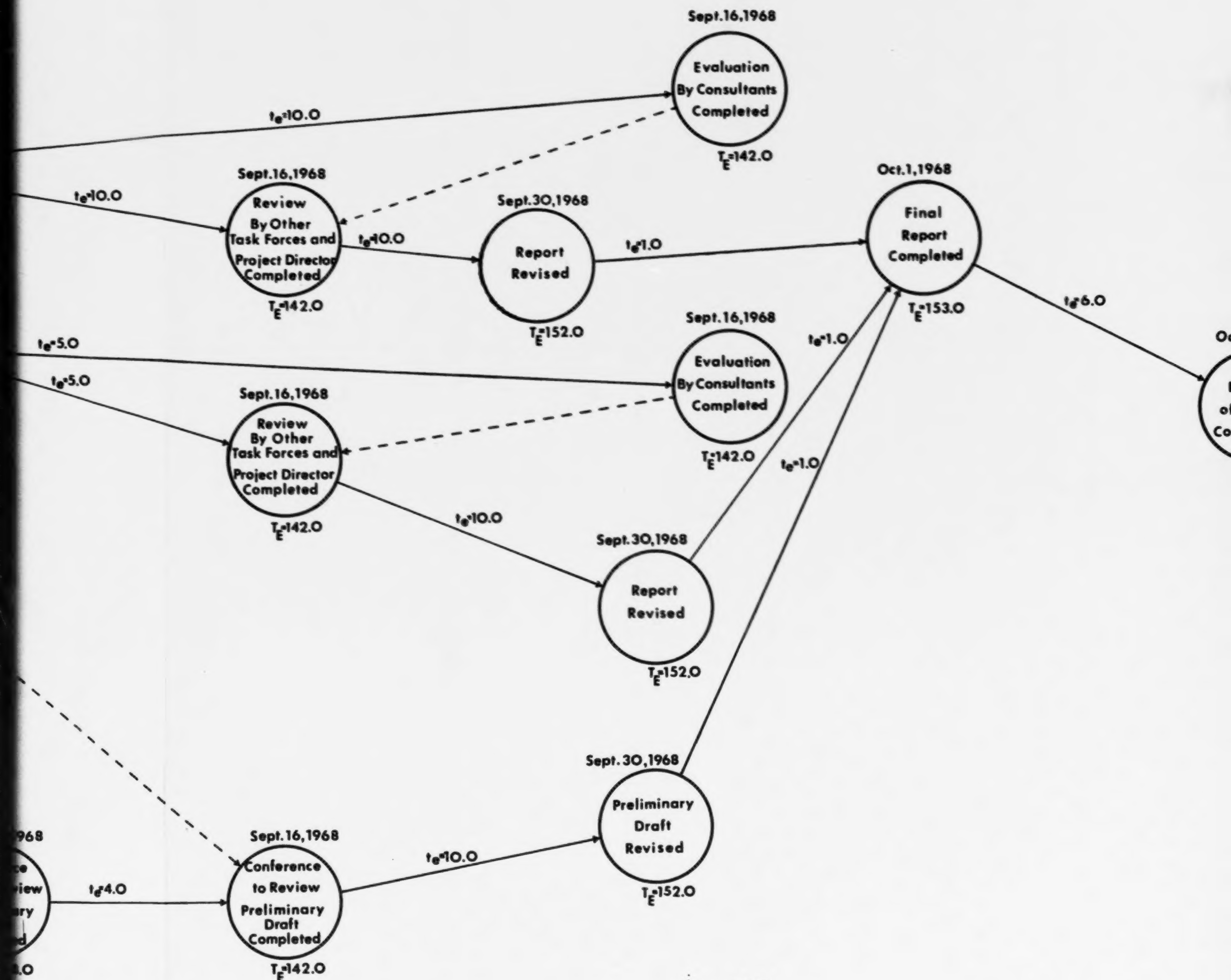
t_e=37.0
Sept. 10,1968
Conference Plan to Review Preliminary Draft Completed
T_E=138.0
t_e=4.0


Sept.16,1968
Evaluation By Consultants Completed
T_E=142.0
t_e=10.0
Sept.16,1968
Review By Other Task Forces and Project Director Completed
T_E=142.0
t_e=10.0
t_e=10.0
Sept.30,1968
Report Revised
T_E=152.0
t_e=1.0
Oct.1,1968
Final Report Completed
T_E=153.0
t_e=6.0
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Evaluation By Consultants Completed
T_E=142.0
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Sept.16,1968
Review By Other Task Forces and Project Director Completed
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t_e=1.0
t_e=1.0
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Sept.30,1968
Report Revised
T_E=152.0
Sept. 30,1968
Preliminary Draft Revised
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Conference to Review Preliminary Draft Completed
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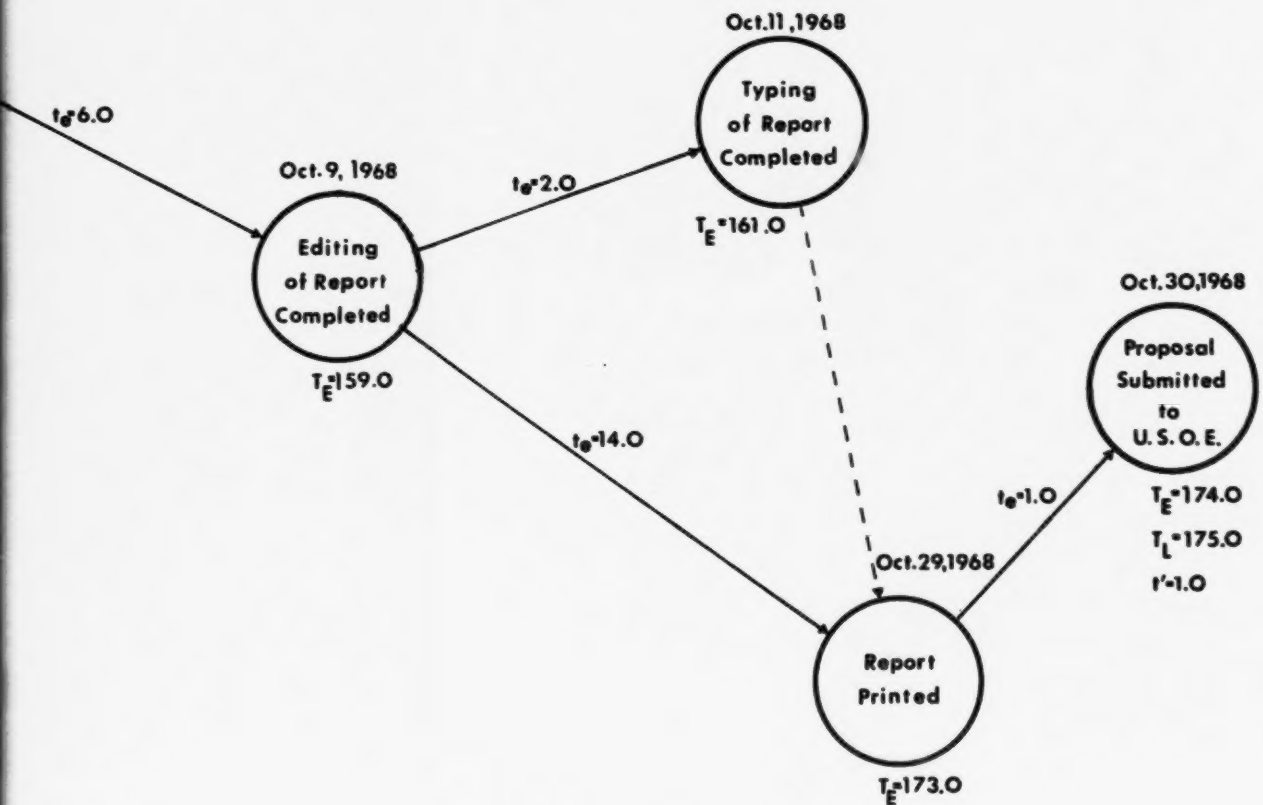
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Typing of Report Completed
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t_e=14.0
Oct.29,1968
Report Printed
T_E=173.0
t_e=1.0
Oct.30,1968
Proposal Submitted to U. S. O. E.
T_E=174.0
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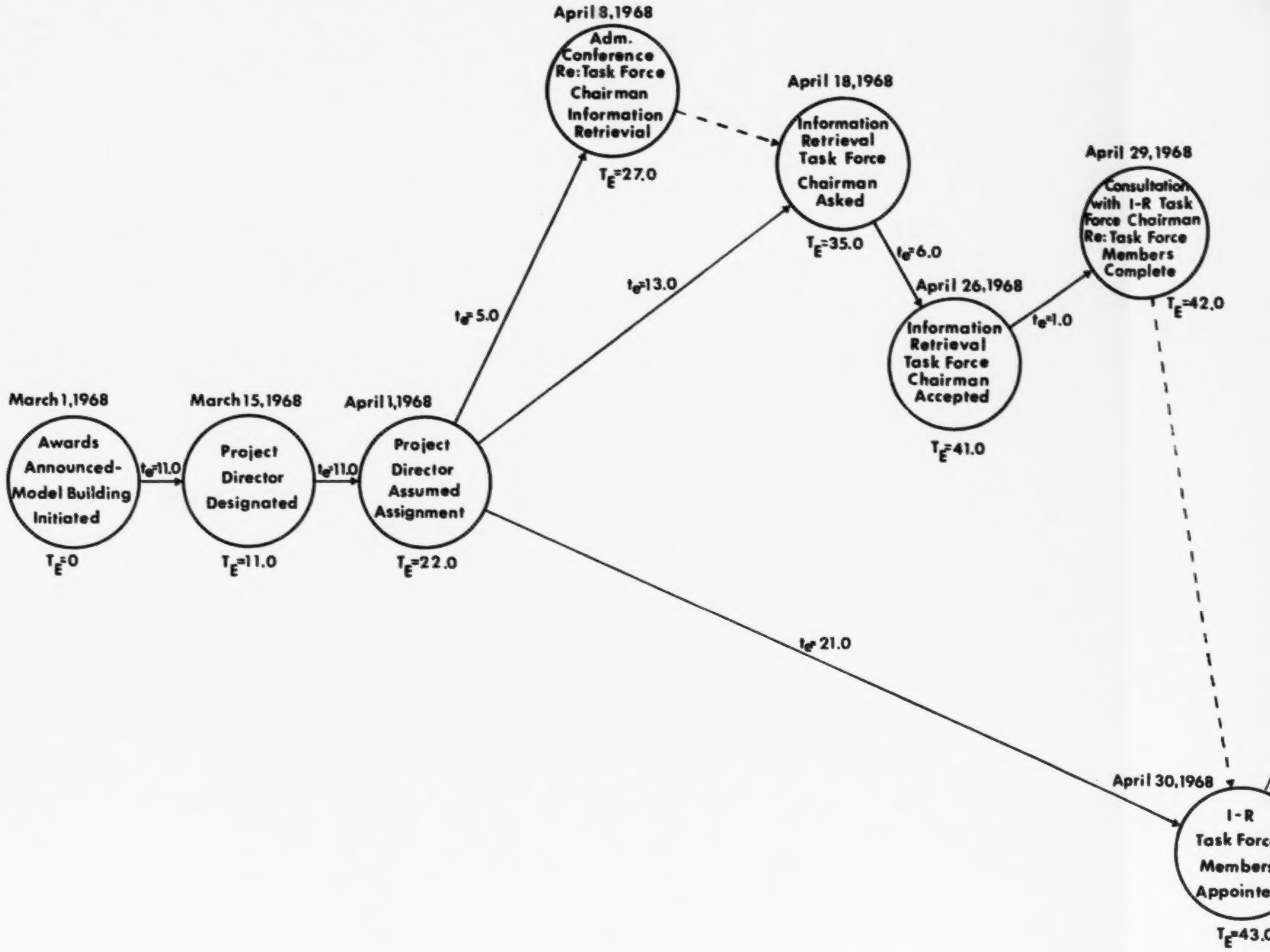
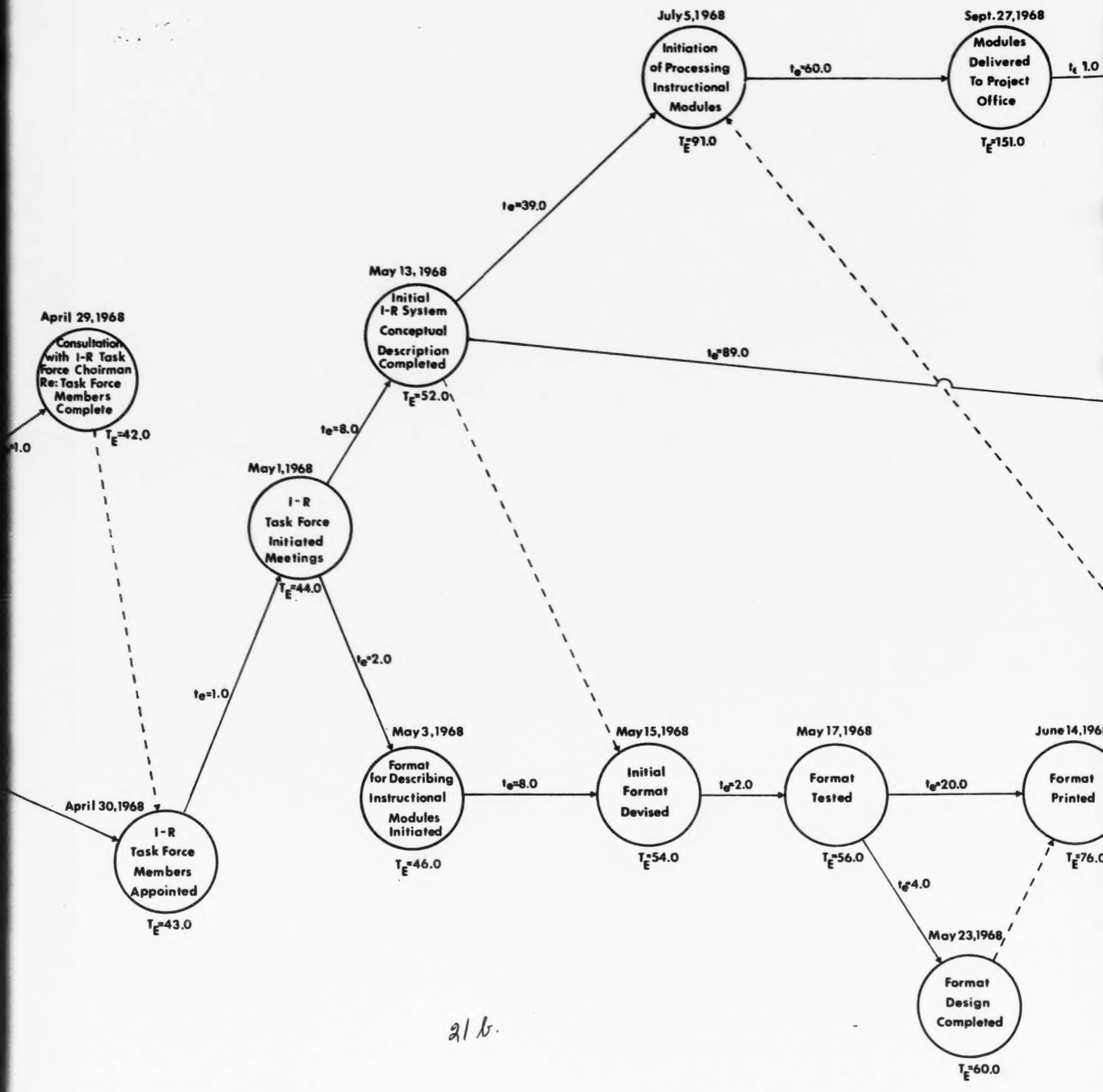
t'=1.0

PERT-BSTEP-MODEL BUILDING-INFORMATION RETRIEVAL TASK FORCE


March 1, 1968
Awards Announced-Model Building Initiated
T_E=0
t_e=11.0
March 15, 1968
Project Director Designated
T_E=11.0
t_e=11.0
April 1, 1968
Project Director Assumed Assignment
T_E=22.0
t_e=5.0
April 8, 1968
Adm. Conference Re: Task Force Chairman Information Retrievial
T_E=27.0
t_e=13.0
April 18, 1968
Information Retrieval Task Force Chairman Asked
T_E=35.0
t_e=6.0
April 26, 1968
Information Retrieval Task Force Chairman Accepted
T_E=41.0
t_e=1.0
April 29, 1968
Consultation with I-R Task Force Chairman Re: Task Force Members Complete
T_E=42.0
t_e=21.0
April 30, 1968
I-R Task Force Members Appointed
T_E=43.0


July 5,1968
Initiation of Processing Instructional Modules
T_E=91.0
t_e=60.0
Sept.27,1968
Modules Delivered To Project Office
T_E=151.0
t_e 1.0
t_e=39.0
May 13, 1968
Initial I-R System Conceptual Description Completed
T_E=52.0
t_e=89.0
April 29,1968
Consultation with I-R Task Force Chairman Re: Task Force Members Complete
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t_e=8.0
May 1,1968
I-R Task Force Initiated Meetings
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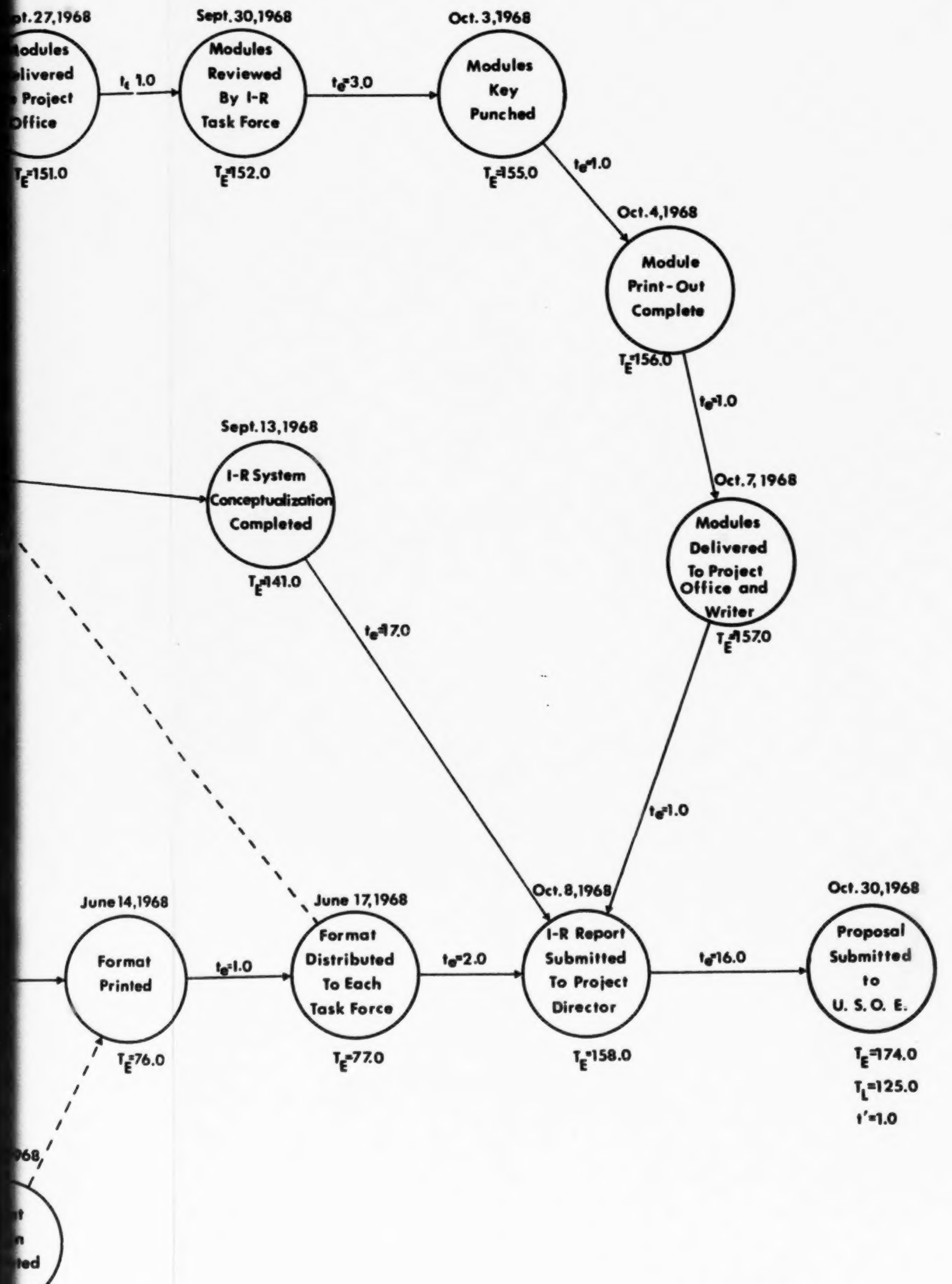
t_e=2.0
t_e=1.0
May 3,1968
Format for Describing Instructional Modules Initiated
T_E=46.0
t_e=8.0
May 15,1968
Initial Format Devised
T_E=54.0
t_e=2.0
May 17,1968
Format Tested
T_E=56.0
t_e=20.0
June 14,196
Format Printed
T_E=76.
April 30,1968
I-R Task Force Members Appointed
T_E=43.0
t_e=4.0
May 23,1968
Format Design Completed
T_E=60.0



pt.27,1968
Modules
elivered
Project
Office
T_E=151.0
t_e 1.0
Sept.30,1968
Modules
Reviewed
By I-R
Task Force
T_E=152.0
t_e=3.0
Oct.3,1968
Modules
Key
Punched
T_E=155.0
t_e=1.0
Oct.4,1968
Module
Print-Out
Complete
T_E=156.0
t_e=1.0
Oct.7,1968
Modules
Delivered
To Project
Office and
Writer
T_E=157.0
Sept.13,1968
I-R System
Conceptualization
Completed
T_E=141.0
t_e=17.0
t_e=1.0
June 14,1968
Format
Printed
T_E=76.0
t_e=1.0
June 17,1968
Format
Distributed
To Each
Task Force
T_E=77.0
t_e=2.0
Oct.8,1968
I-R Report
Submitted
To Project
Director
T_E=158.0
t_e=16.0
Oct.30,1968
Proposal
Submitted
to
U. S. O. E.
T_E=174.0
T_L=125.0
t'=1.0
968
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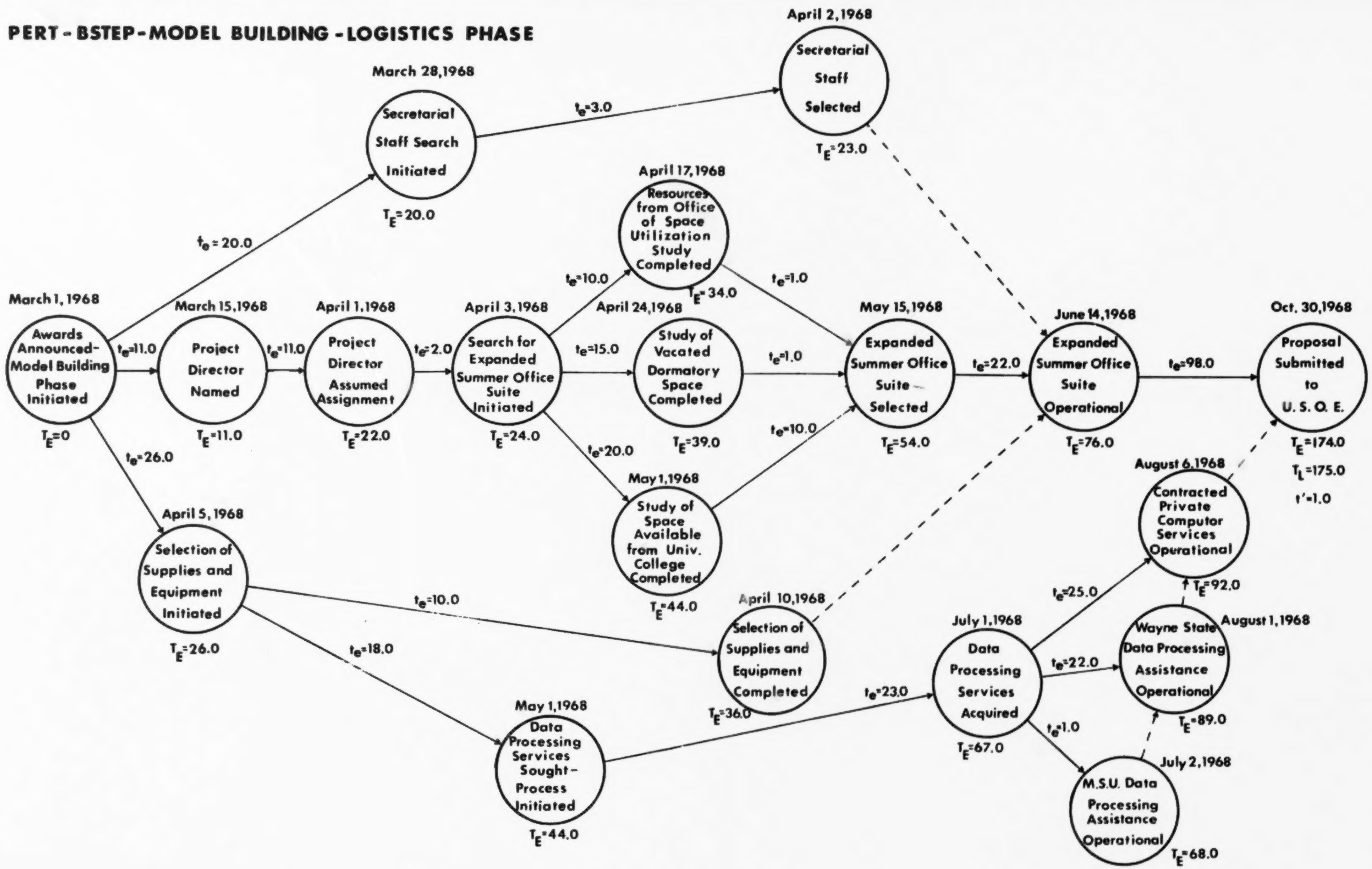
ted
0.0

PERT Chart 1:4 Model Building - Information Retrieval


PERT - BSTEP - MODEL BUILDING - LOGISTICS PHASE
March 1, 1968
Awards Announced-Model Building Phase Initiated
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$t_e=20.0$
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$t_e=26.0$
March 28,1968
Secretarial Staff Search Initiated
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April 2, 1968
Secretarial Staff Selected
$T_E=23.0$
March 15,1968
Project Director Named
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April 1,1968
Project Director Assumed Assignment
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April 3,1968
Search for Expanded Summer Office Suite Initiated
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April 17,1968
Resources from Office of Space Utilization Study Completed
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April 24,1968
Study of Vacated Dormatory Space Completed
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May 1,1968
Study of Space Available from Univ. College Completed
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June 14,1968
Expanded Summer Office Suite Operational
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$t_e=98.0$
Oct. 30,1968
Proposal Submitted to U. S. O. E.
$T_E=174.0$
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April 5, 1968
Selection of Supplies and Equipment Initiated
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April 10,1968
Selection of Supplies and Equipment Completed
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May 1,1968
Data Processing Services Sought-Process Initiated
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July 1,1968
Data Processing Services Acquired
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$t_e=25.0$
$t_e=22.0$
$t_e=1.0$
August 6,1968
Contracted Private Computor Services Operational
$T_E=92.0$
August 1,1968
Wayne State Data Processing Assistance Operational
$T_E=89.0$
July 2,1968
M.S.U. Data Processing Assistance Operational
$T_E=68.0$

PERT Chart 1:5 Model Building - Logistics Phase

The Feasibility Study

A program such as BSTEP has far-reaching implications and ramifications in its operation. In the first place, it implies a new concept in teacher education, not simply a patch on the old fabric. Dr. Donald Davies, upon his appointment as Associate Commissioner of Education, referred to teacher education as the slum of the American educational system. Past efforts have been hampered by lack of funds, lack of interest, and lack of commitment to a vitally new and different concept of teacher education. Within the context of BSTEP, such a venture is possible, grounded upon the most current knowledge of the behavioral sciences, educational technology, and elementary education; but not limited by current parameters of myopic vision or commitment which have doomed so many previous efforts to failure or at best limited success.

A second implication of BSTEP is in its organizational structure, for it implies a new coalition among educational agencies, professional organizations, community resources, and business and industry. No longer can preservice education remain the purview of the university, and in-service education the domain of the school, with limited communication and no coordination of program or efforts between them. No longer can non-school resources be ignored by educators planning the preparation of teachers. No longer can professional educators ignore the academician and vice-versa, with each "doing his own thing." Joint operation by all these agencies, working in concert, is vital to the development of a program such as BSTEP and the full use of the Clinic-School Network.

Third, BSTEP requires that a whole new set of instructional materials be designed, tested, and redesigned. While the number of these are becoming increasingly available, they are but a minuscule portion of needed development.

Fourth, BSTEP implies utilization of the most modern technology available, whether from industry or from education. Using computer science resources, in management, in instructional module development and delivery to students, in information storage and retrieval, and in evaluation schemes is but one aspect of the technology required. Some can be redesigned and modified from non-education sources, but several needs of the program will push the bounds of technological progress.

Fifth, and most important, a program such as this must not become stagnant. Indeed, the very cornerstone of the philosophical position underlying BSTEP is its adaptability to change. Through study of potential future trends, a curriculum model adaptable to change, and in-service education of staff, future-orientation is not only necessary, but inevitable.

Such a bold venture in teacher education as BSTEP requires careful study to insure the most successful development, implementation, and dissemination of results. The management enterprise involved in a cooperative program of seven colleges within a university is complex. Broadening this to include other agencies in a Clinic-School Network, and involving students and staff on many levels of participation and expertise, complicates management many-fold. And the question of how such an organization of resources is to most efficiently, creatively, and effectively develop and test the BSTEP curriculum, touches on many aspects of university, school, and community life. As noted earlier, this feasibility study was designed to consider the many ramifications and interrelationships involved in BSTEP, and make recommendations regarding implementation modes.

Michigan State University

The nature of the institution, its relations to elementary schools and other colleges in the state, its size, and its general orientation and commitment bear upon the recommendations to be made. Michigan State University is the pioneer land grant university. Since its founding it has been dedicated to serving the educational needs of the people of Michigan. The resources of the University which so well met the agricultural needs of rural Michigan in previous generations now also focuses upon the needs of the great urban centers of the nation and resource development needs abroad.

In its latest report, the American Association of Colleges for Teacher Education ranked MSU first in the number of certified elementary teachers with 866 students graduated in 1967; first in total teacher certification in the United States with 2,102 elementary and secondary graduates, and fifth in graduate education degrees, with 868 graduates.

Some of the resources and agencies of the university which are relevant to teacher preparation and the development of a new program are summarized below.

The Council of Deans, composed of the deans of all colleges related to teacher preparation, coordinate university-wide programs and insure that teacher education is a university-wide commitment.

The All-University Teacher Education Council includes representatives from each of the MSU colleges having roles in teacher education. The chairman of the Council is the Director of the School of Teacher Education for the College of Education. The Council acts as a review agency for all certification programs and as a forum in which pedagogical and substantive disciplines exchange views and coordinate teacher education from an all-university perspective.

A State-Wide Network of 150 Cooperating School Systems are directly involved in internships, externships, student teaching, practicum field studies and consultation. Interest is being placed increasingly on the College's growing involvement in educational developments in urban metropolitan centers and complex educational institutions.

Subject-Area Teaching Institutes, which span the five MSU Colleges of Arts and Letters, Education, Natural Science, Social Science and University College, are administered jointly by the subject-area colleges and the College of Education. These institutes include the Science-Mathematics Teaching Center, the Social Science Teaching Institute, and the Humanities Teaching Institute. They aid in implementation of subject programs in teacher-education; prepare, test and disseminate new materials for use in the schools, do research in areas related to curriculum and instruction; and offer in-service consultation to the schools of Michigan.

The Learning Systems Institute focuses on behavioral models of instructional systems. Within the Institute are research groups for educational use of the computer, clinical studies of teaching, simulation design, and educational systems evaluation. The Institute goal is to narrow the gap between research and practice in education.

The Human Learning Research Institute of the College of Education and the College of Social Science conducts research and experimental studies on effectiveness and efficiency of learning. Participants in the research are professionals for the fields of education, psychology, sociology, political science, biology and anthropology.

The Elementary Intern Program operates in 11 centers and 52 school districts. Elementary education students may elect EIP during the sophomore year. In this program, the student spends two terms in a cooperating center during his junior year and does intern-teaching under supervision in his senior year. All professional education experiences are integrated with practice in elementary school settings. The intern earns a stipend of about $4,800, is responsible for teaching an elementary class, and is supported by an intern consultant who works full-time with a maximum of five or six interns. The student attends two summer sessions in a four-year period prior to graduation.

The Mott Institute for Community Improvement, funded by a grant from the Mott Foundation, operates two teacher-education centers, in Flint and Detroit, especially oriented to prospective teachers in inner-city settings. Such teachers spend two consecutive terms in one of the centers, attending seminars and observing teachers, children and aspects of the community.

The Instructional Resources Center This center occupies part of the first floor of the five-story College of Education building, and comprises a library and attached study space, offices, workrooms and a conference room. A limited collection of children's literature, recorded materials, reference books, texts, instructional media and related literature, audio- and video- hardware and software, and curriculum guides comprise the center's resources.

The Institute for International Studies in Education contributes fundamental knowledge about international education and reinforces the work of students and faculty in this area. The Institute work involves four major efforts: to promote and conduct research, to direct overseas technical assistance programs in education, to provide a professional program for faculty in international education, and to assist in development of student programs designed to probe educational problems and processes in world-wide perspective and promote overseas educational service.

General all-university agencies which service the College of Education are:

The Computer Center includes the Computer Laboratory and the Computer Institute for Social Science Research. The Computer Laboratory operates large-scale digital computer equipment (Control Data Corporation, Types 3600 and 6500) as an education and research service. The Institute trains graduate and undergraduate students in computer programming and application. Institute research work includes statistical methods, operations research, computation linguistics, information retrieval, computer analysis of verbal texts, computational graphics and various computer simulations such as group-behavior, escalation of international conflict, diffusion of technical innovations, and the spread of information.

The Instructional Media Center provides educational media services such as instructional film library; all types of projectors, recording and public-picture film production; and closed-circuit television. Their experience in developing materials is valuable in projecting education media materials needs and cost-analysis.

The Office of Evaluation Services provides appropriate technical assistance and advice in the areas of examinations and evaluations of academic programs and the progress of students. Appropriate test-scoring services and other technical aid is available.

The Center for Urban Affairs coordinates a wide range of university activities as they relate to urban areas. Research, experimentation, information gathering and dissemination are activities significant in providing equal opportunities in education on the campus.

The Office of Institutional Research collects and organizes data and makes analytical studies to provide information and recommendations relative to current operation and future planning of MSU academic programs.

The Educational Development Program, administered through the MSU Provost's Office, provides University funds for faculty development of new and experimental curricula, particularly in areas of heavy enrollments. EDP has provided funds in support of the BSTEP curriculum developed in Phase I in Linguistics, Communications, and Music.

University Commitment

MSU faculty and administration commitment to the BSTEP model program is evidenced in the participation of deans and faculty members from seven MSU colleges in preparing the BSTEP model which was submitted to the U.S. Office of Education on October 31, 1968. The deans of the seven colleges not only provided policy direction through the Educational Policies Council, but also appointed a faculty representative from each college to serve on the Project Advisory Committee.

MSU faculty members comprised the greater part of the nearly 200 professionals who shared in initial model development and the ensuing feasibility study.

The Provost's office has indicated its interest in BSTEP, and its continued funding and operation after the period of federal funding has terminated.

During the year since completion of Phase I, curriculum development has continued in several areas. In the elementary education department, faculty committed themselves to development and pilot work using BSTEP modules. Several non-education departments have significantly revised their offerings as a result of work done during the summer of 1968. In a recent school board election, every candidate who had participated in any way in BSTEP emphasized this role as a major consideration in his credentials. However, all efforts to date are meager compared with the tasks required to implement BSTEP as conceptualized. Major additional resources would be necessary to develop materials and restructure the total curriculum as needed.

Limitations of Size

The extensiveness of MSU provides numerous resources which would contribute to development of the teacher education model, but the size of the student body complicates the testing of a new program. Many colleges and universities with few students might consider implementation and testing with their total student body. With over 2,000 freshmen each year and over 1,200 graduates, such a procedure would be folly, and lead only to frustration and failure. The mechanics and costs of producing experimental materials in the required quantities is but one illustration of problems encountered.

Within this feasibility study, the staff has assumed that 100 students would be admitted each year, so that by the fourth year about 400 students would comprise the experimental student body. These students would be tested upon entrance and carefully followed throughout the preservice and internship years. In addition, selected portions of the regular student body would study various aspects of the program, particularly those which would not be immediately studied by the experimental group. Through this procedure, the first experimental group would not always be studying the first version of materials. Most elementary education students, too, would encounter some aspect of the program during their program at MSU. Immediate processing of all education students, or even a major portion of them into BSTEP is not contemplated simply because of potential problems. In no way, however, does this decision reflect a lack of commitment to the program, either by faculty or administration. Designating an experimental group in the initial stages can lead to many benefits in testing parts of the program, the total program, and having a comparision group.

During the five-year study, the student body would be progressively phased into BSTEP, toward total commitment.

Development of the Feasibility Study

The Feasibility Study of BSTEP was undertaken May 1, 1969, following a USOE request for proposal, and the award and funding of the study.

To implement the Feasibility Study, ten task forces were appointed to prepare: 1) a study of the Program Development Design; 2) further development and feasibility study of the Clinical Experience area; 3) a review of the feasibility of the BSTEP General-Liberal Education, Scholarly Modes of Knowledge, and Professional Use of Knowledge areas; 4) a study of the Instructional Resources Support System; 5) a systematic analysis of future society; 6) a system of faculty orientation and in-service education 7) an administrative design; 8) a system for selection and retention of students; 9) a review of the feasibility of the Information Retrieval Subsystem; and 10) an evaluation and benefit/cost system, and to prepare an illustrative budget.

An organizational design, similar to that used in the BSTEP Phase I Project, was prepared for the Feasibility Study. The Educational Policies Council, comprising the deans of the seven participating

MSU colleges, headed the organization; followed by the Project Advisory Committee, composed of appointed college faculty representatives.

The Project Director was given charge of the ten task force teams, each with an appointed chairman. The task force teams comprise MSU and other faculty and administrative personnel with expertise in the respective areas of study. The individual task forces prepared working documents in regard to procedures, policies, personnel, and management.

An Operations Commission, consisting of the chairmen of the task forces and the Project Director, examined the documents, made recommendations and coordinated efforts and resources.

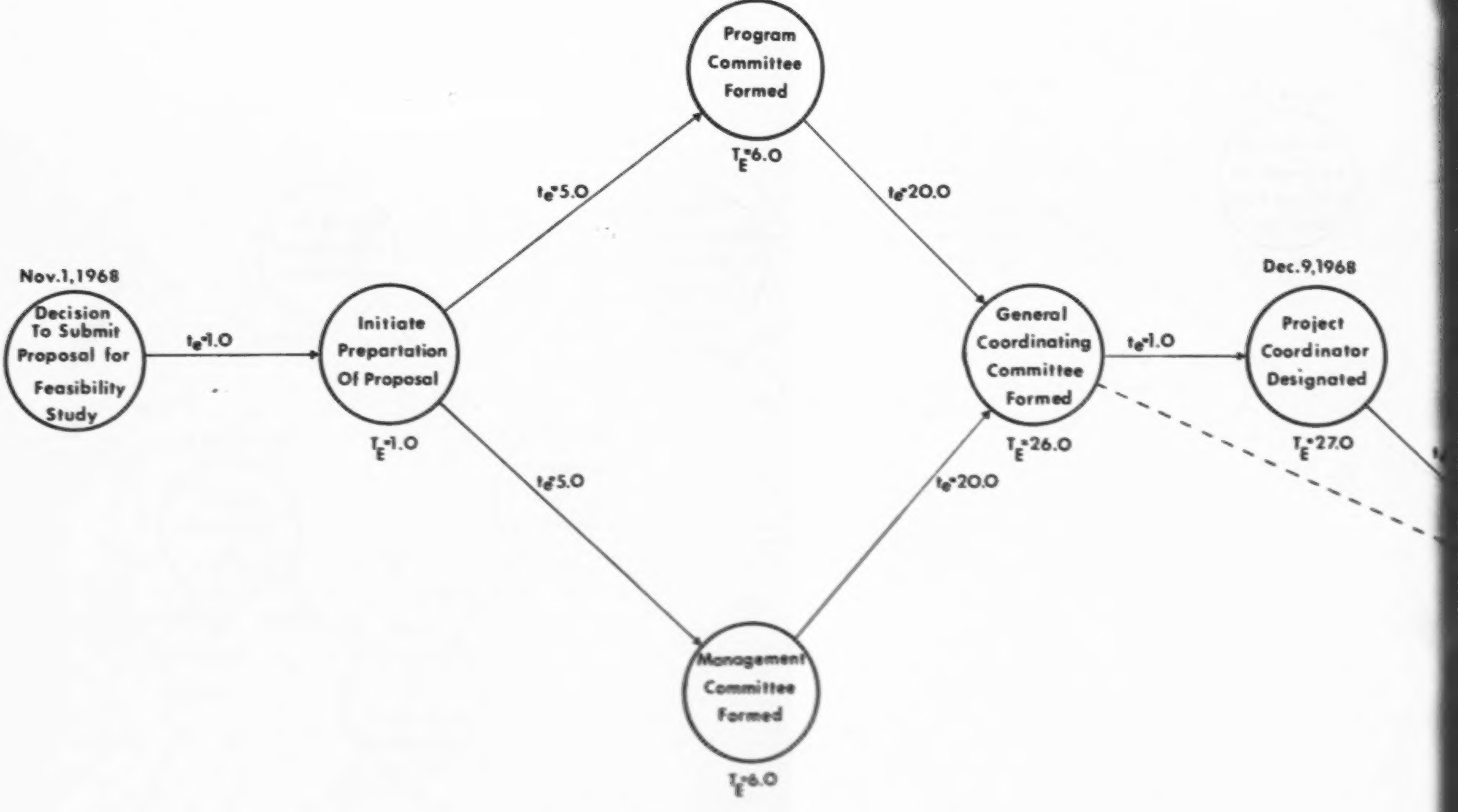
The Project Advisory Committee monitored development of the specifications and made suggestions. University-wide representation on the Committee added new dimensions for consideration.

The Educational Policies Council reviewed the recommendations and established general policies for the Feasibility Study.

An evaluation conference has been scheduled for March, 1970 to review the completed Feasibility Study.

PERT management procedures were utilized in the development of the feasibility study, and are reproduced on the following page.

PERT - BSTEP - FEASIBILITY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Decision To Submit Proposal for Feasibility Study
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Initiate Prepartation Of Proposal
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Program Committee Formed
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t_e=5.0
Management Committee Formed
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General Coordinating Committee Formed
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Dec.9,1968
Project Coordinator Designated
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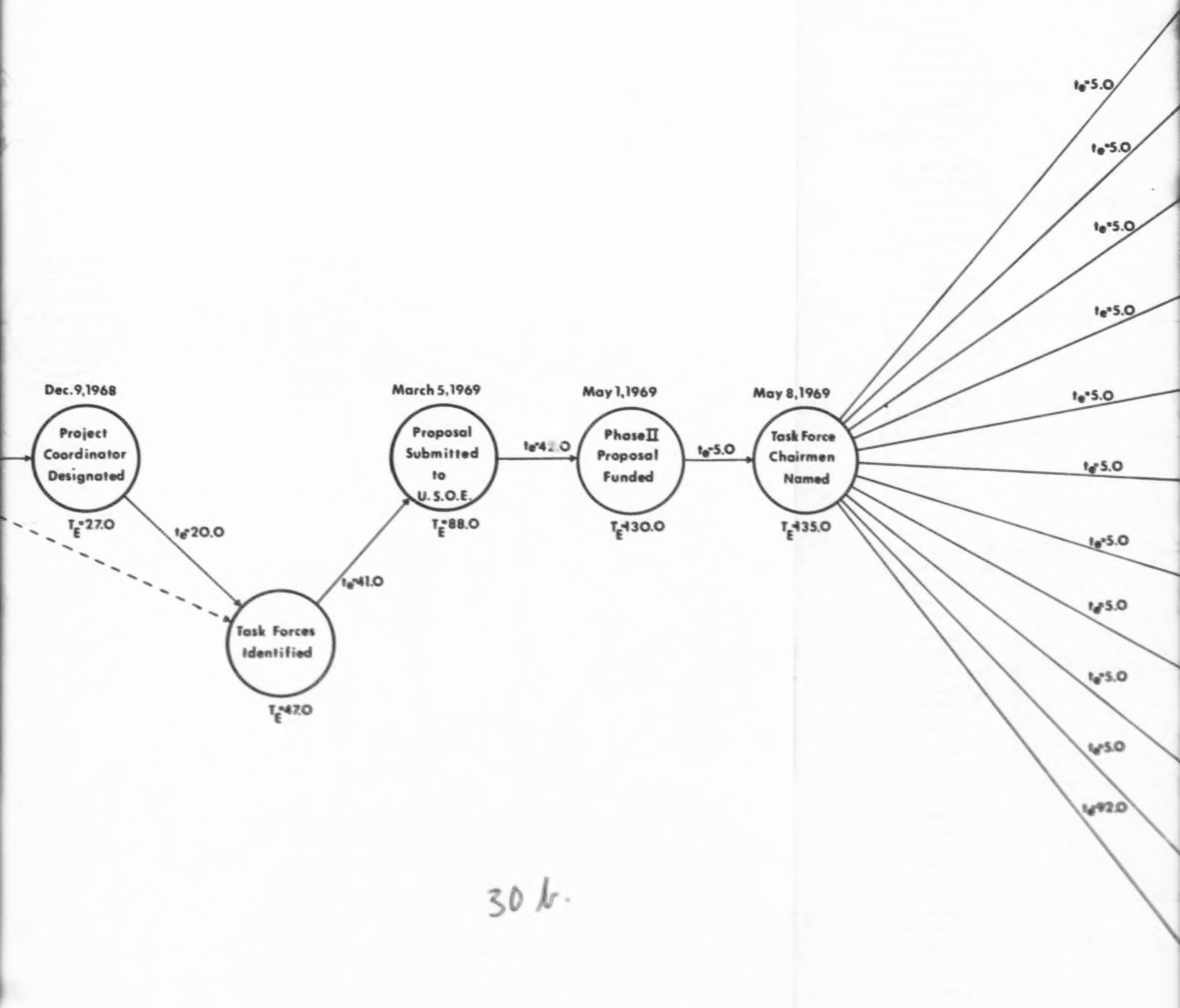
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Task Forces Identified
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Phase II Proposal Funded
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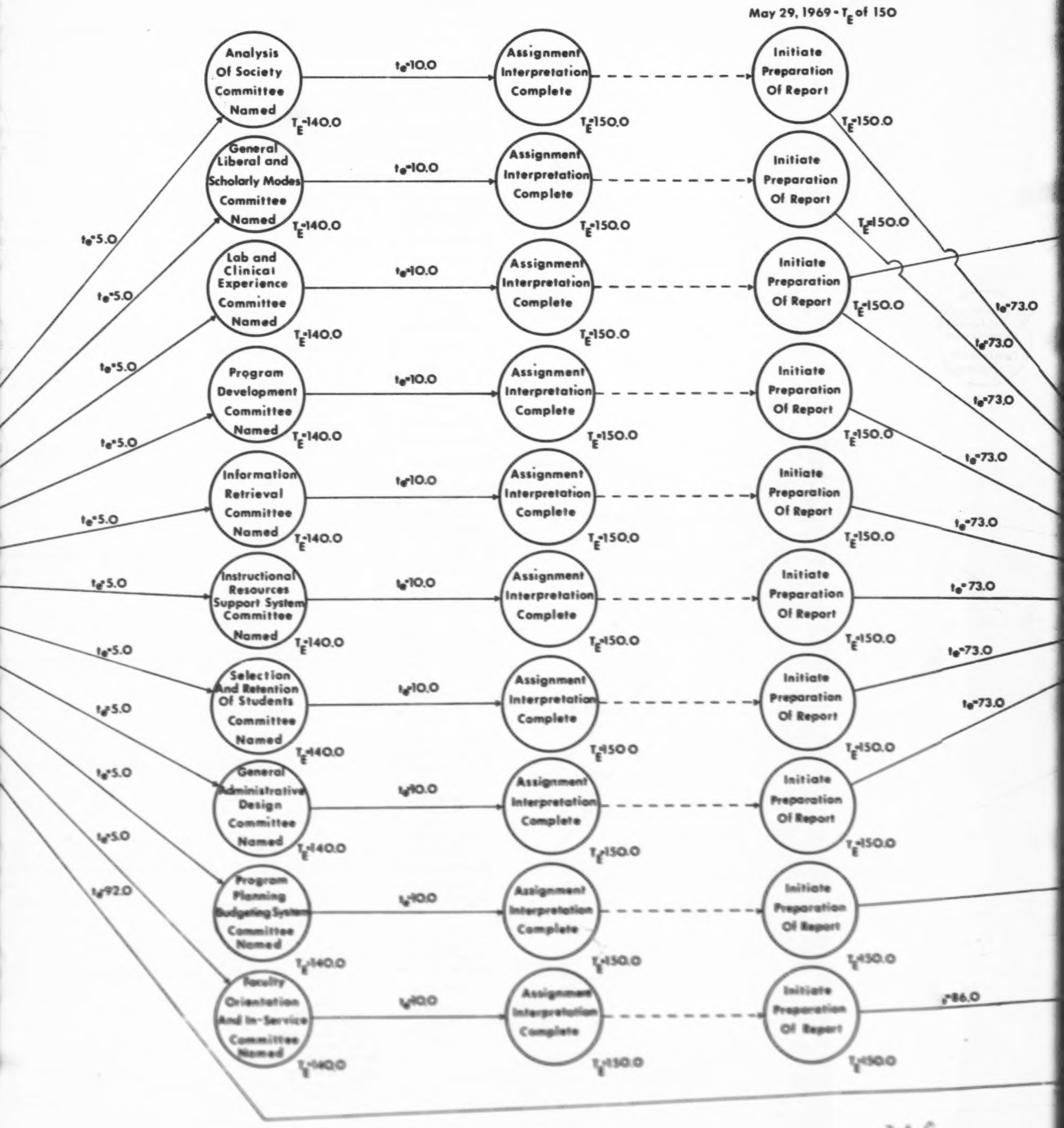
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Initiate Preparation Of Report
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Initiate Preparation Of Report
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Lab and Clinical Experience Committee Named
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Program Development Committee Named
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Initiate Preparation Of Report
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Initiate Preparation Of Report
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Instructional Resources Support System Committee Named
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Initiate Preparation Of Report
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Selection And Retention Of Students Committee Named
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Initiate Preparation Of Report
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General Administrative Design Committee Named
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Program Planning Budgeting System Committee Named
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Initiate Preparation Of Report
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Faculty Orientation And In-Service Committee Named
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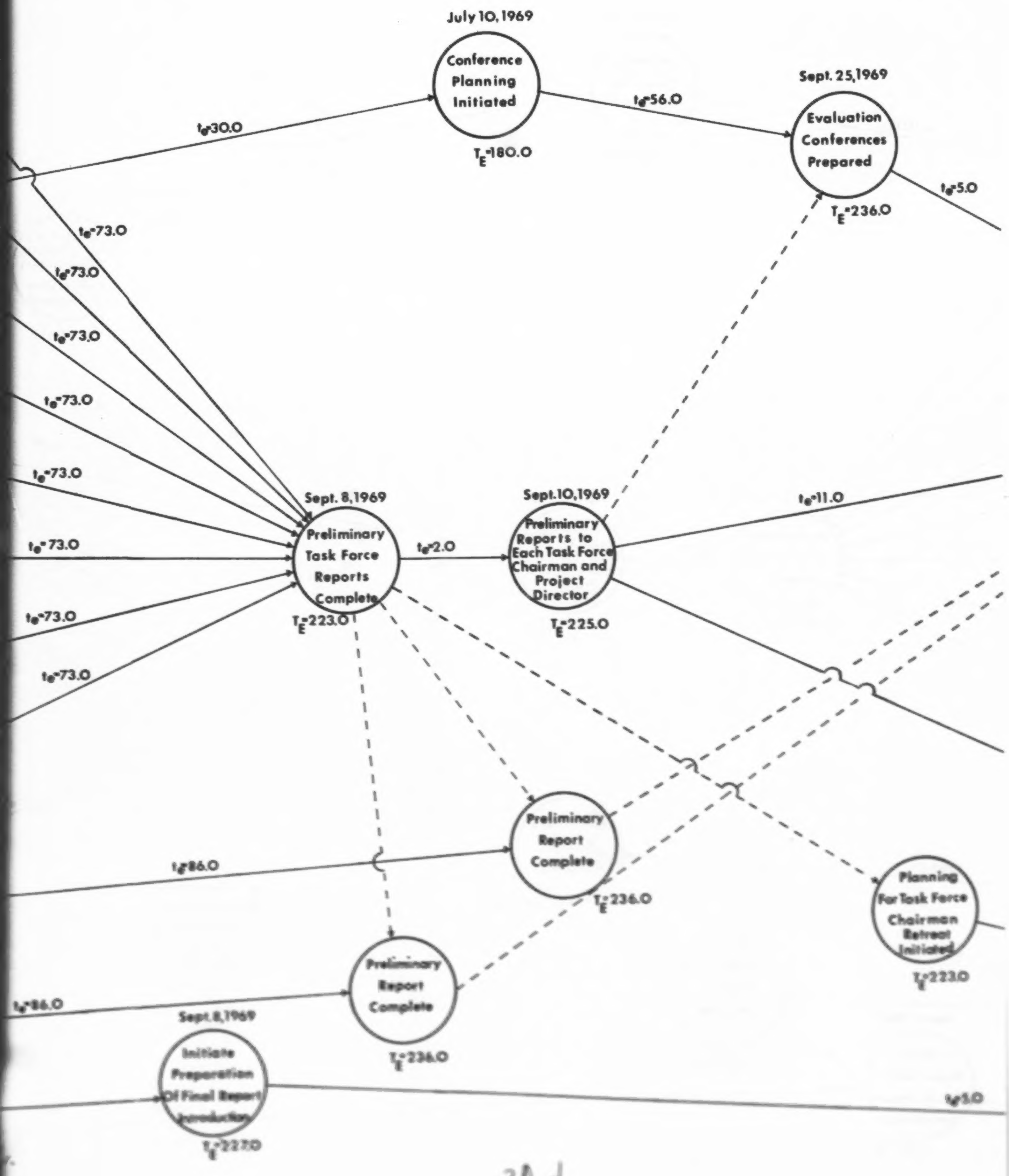
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Preliminary Task Force Reports Complete
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Sept. 10, 1969
Preliminary Reports to Each Task Force Chairman and Project Director
$T_E=225.0$
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Preliminary Report Complete
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Planning For Task Force Chairman Retreat Initiated
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Preliminary Report Complete
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Sept. 8, 1969
Initiate Preparation Of Final Report Introduction
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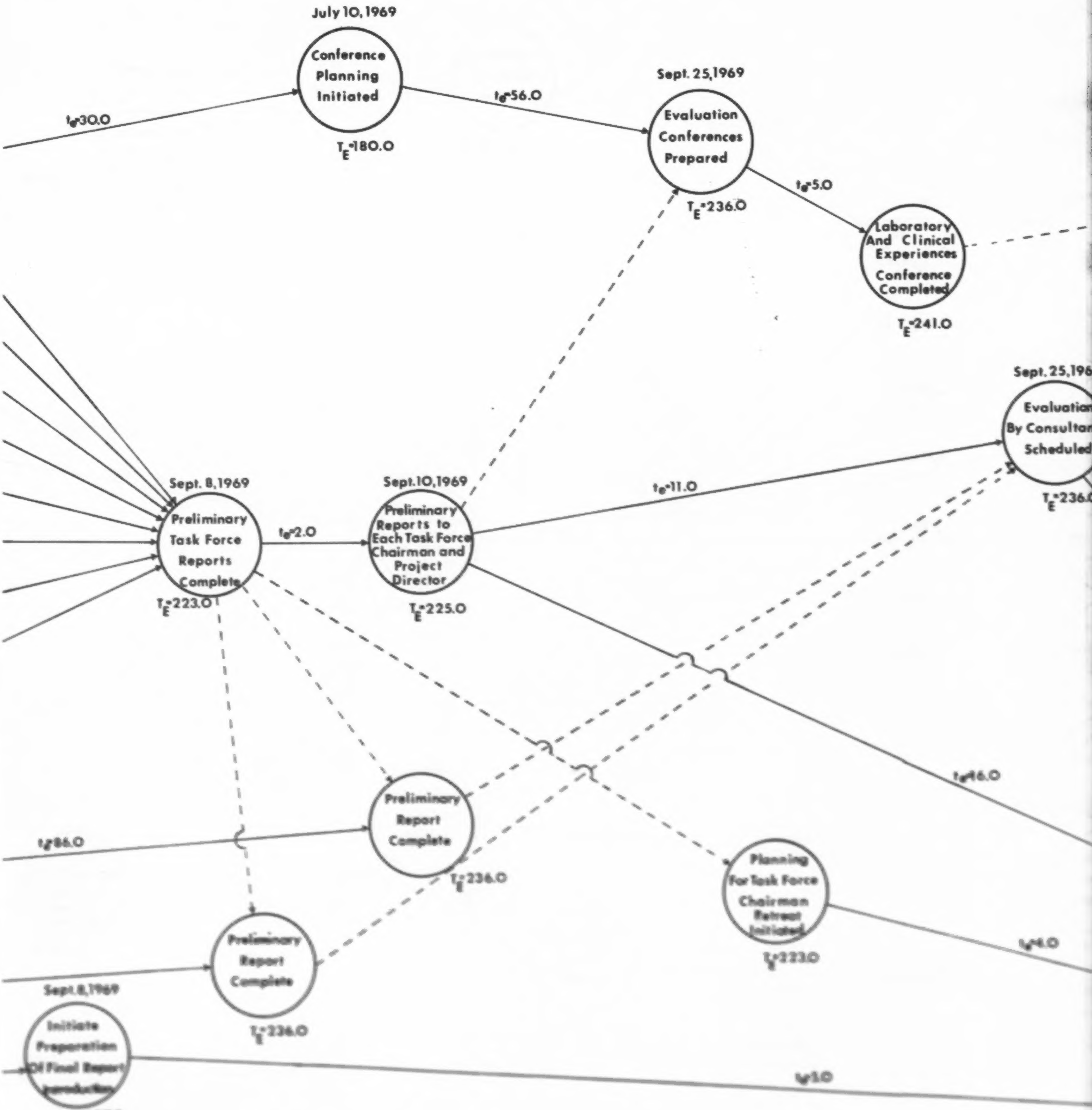
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Conference Planning Initiated
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Sept. 25, 1969
Evaluation Conferences Prepared
T_E=236.0
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Laboratory And Clinical Experiences Conference Completed
T_E=241.0
Sept. 25, 196
Evaluation By Consultan Scheduled
T_E=236.
Sept. 8, 1969
Preliminary Task Force Reports Complete
T_E=223.0
t_e=2.0
Sept. 10, 1969
Preliminary Reports to Each Task Force Chairman and Project Director
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Preliminary Report Complete
T_E=236.0
Planning For Task Force Chairman Retreat Initiated
T_E=223.0
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Preliminary Report Complete
T_E=236.0
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Initiate Preparation Of Final Report Introduction
T_E=227.0
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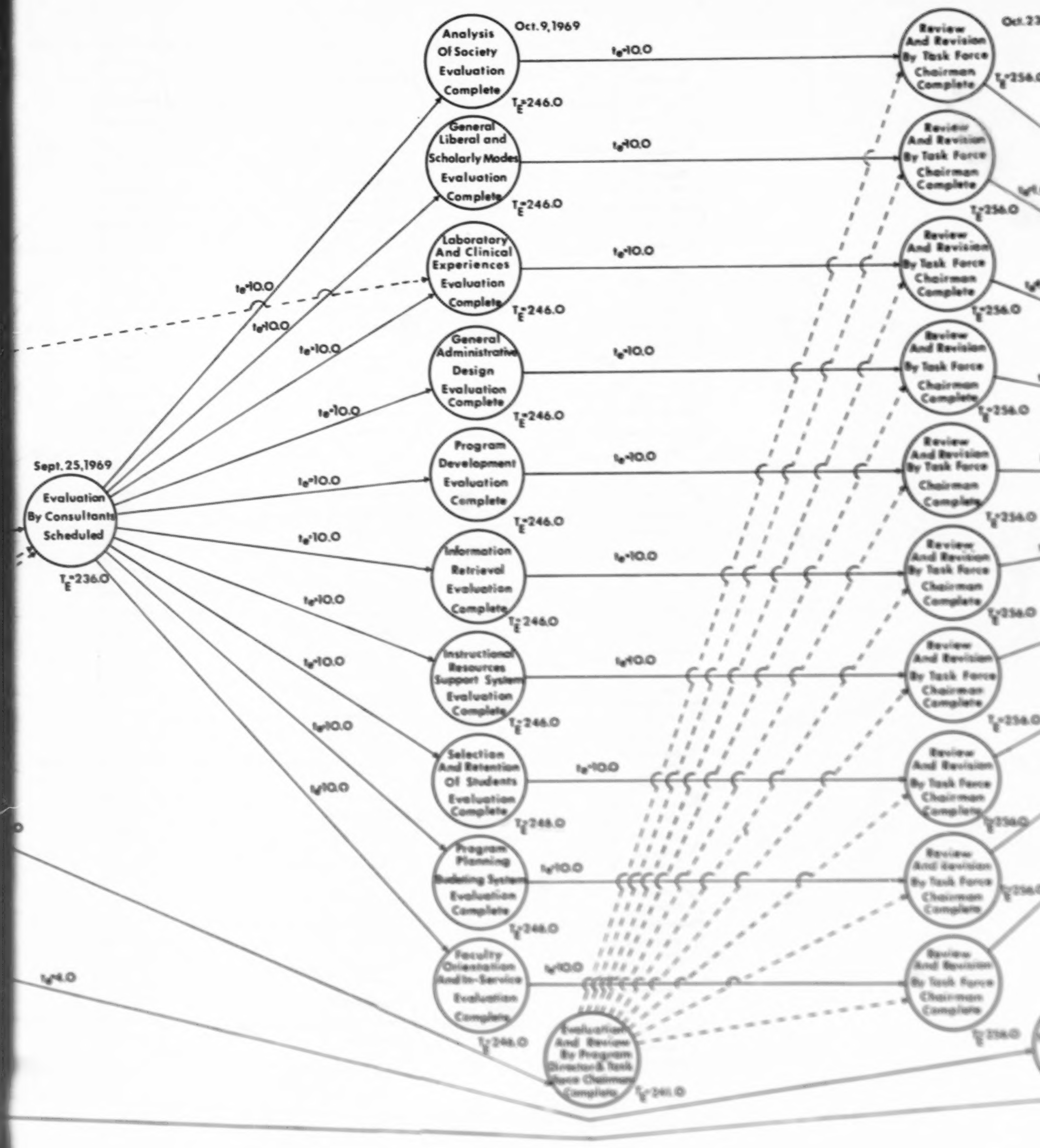
PERT Chart 1:6 Feasibility Study

(Page 30)c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Program Development Evaluation Complete
T_E=246.0
Information Retrieval Evaluation Complete
T_E=246.0
Instructional Resources Support System Evaluation Complete
T_E=246.0
Selection And Retention Of Students Evaluation Complete
T_E=246.0
Program Planning Budgeting System Evaluation Complete
T_E=246.0
Faculty Orientation And In-Service Evaluation Complete
T_E=246.0
Evaluation And Review By Program Director & Task Force Chairmen Complete
T_E=241.0
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t_e=4.0
Oct. 23
Review And Revision By Task Force Chairman Complete
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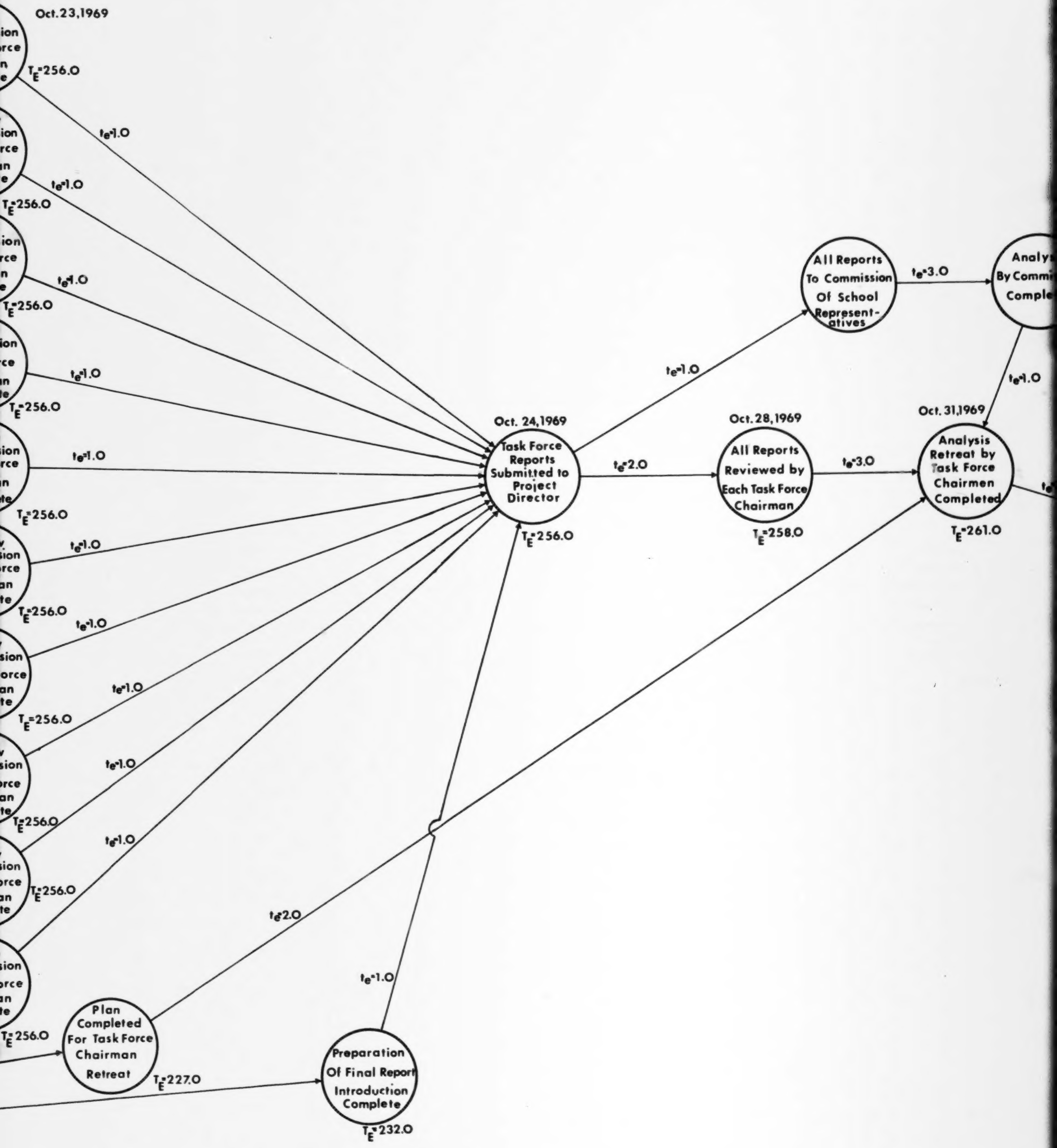
Oct.23,1969
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Task Force Reports Submitted to Project Director
Oct. 24,1969
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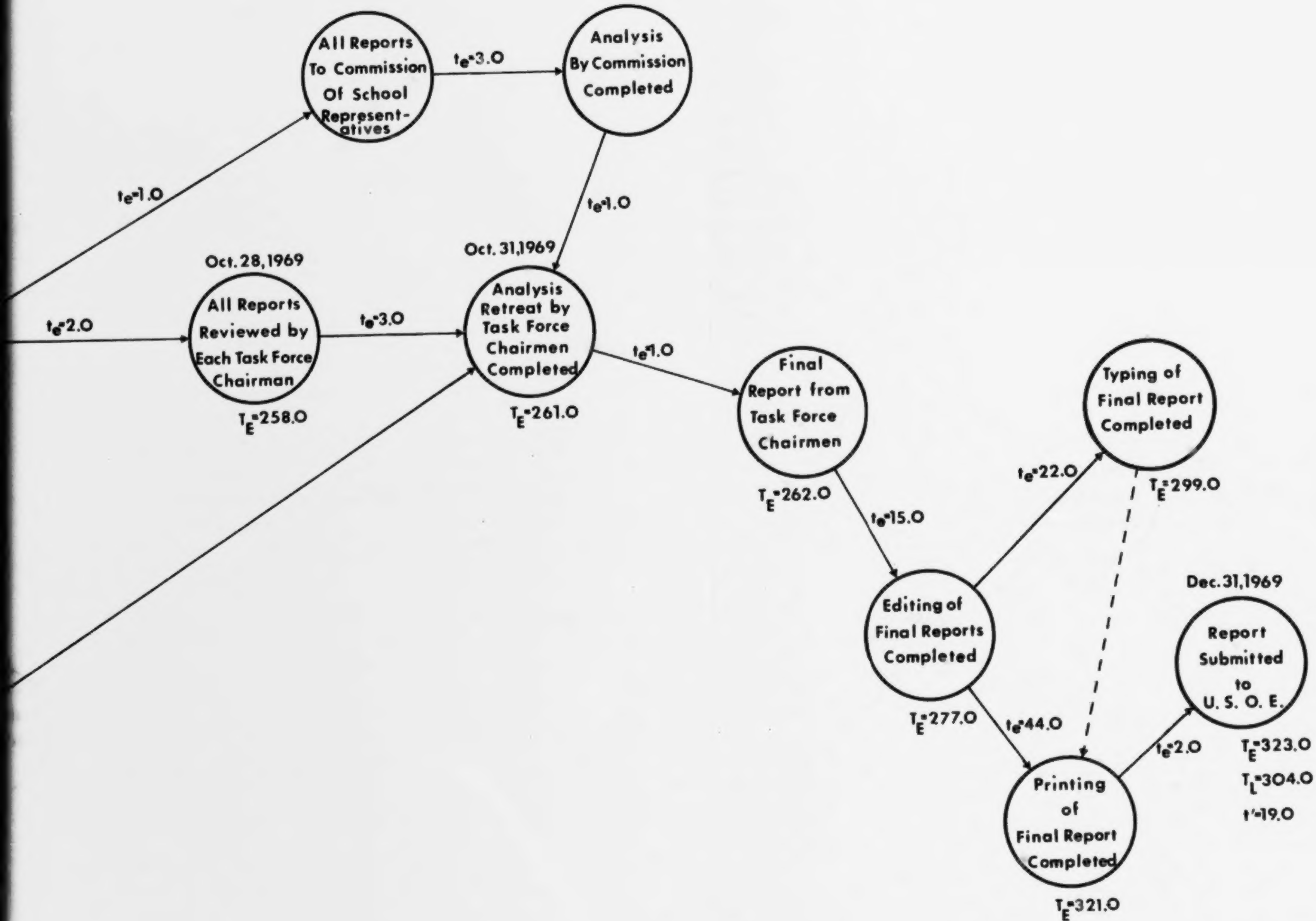
All Reports To Commission Of School Representatives
t_e=3.0
Analys By Commi Comple
t_e=1.0
t_e=2.0
All Reports Reviewed by Each Task Force Chairman
Oct.28,1969
T_E=258.0
t_e=3.0
Analysis Retreat by Task Force Chairmen Completed
Oct. 31,1969
T_E=261.0
t_e=2.0
Plan Completed For Task Force Chairman Retreat
T_E=227.0
Preparation Of Final Report Introduction Complete
T_E=232.0


All Reports To Commission Of School Represent-atives
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Analysis By Commission Completed
te=1.0
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Oct. 28,1969
All Reports Reviewed by Each Task Force Chairman
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te=3.0
Oct. 31,1969
Analysis Retreat by Task Force Chairmen Completed
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Final Report from Task Force Chairmen
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Editing of Final Reports Completed
TE=277.0
te=22.0
Typing of Final Report Completed
TE=299.0
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Printing of Final Report Completed
TE=321.0
te=2.0
Dec. 31,1969
Report Submitted to U. S. O. E.
TE=323.0
TL=304.0
t'=19.0

Personnel for the Feasibility Study

Educational Policies Council

Dr. John E. Ivey, Jr., Chairman
Dean, College of Education

Dr. Jack M. Bain
Dean, College of Communication Arts

Dr. Richard U. Byerrum
Dean, College of Natural Science

Dr. Edward A. Carlin
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Dr. Jeannette A. Lee
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Summary of Recommendations

The Feasibility Study was designed to analyze the human, material, and fiscal resources required to implement BSTEP. Its objectives were to examine various issues related to program implementation; to specify, explore, and weigh the relative merits of various alternatives; and finally to recommend a feasible operational model. Based upon the data gathered and discussed, intelligent decisions could be made relative to program options and cost indices. While the primary focus of this study was to test the feasibility of BSTEP at Michigan State University, the explication of several solution paths may broaden its usefulness to other colleges and universities.

An administrative and management structure for a model BSTEP institution has been designed, including administration, management procedures, cost benefit analysis system, and methods of maintaining relevancy of the program and its management. The report itself is divided into five sections. Following this section, *Section II* examines *Program Development*. *Section III* sets forth ideas and procedures for *Maintaining Program Relevancy*, while *Section IV* explores the *General Administrative Design*. A projected *Budget* is the focus of *Section V*. In the following paragraphs, these sections are briefly explored, providing the reader with a broad outline of the project prior to considering the more explicit and detailed discussions in each section.

Program Development

The basic purpose of BSTEP is to develop an innovative, improved, individualized curriculum for preparing elementary teachers. The nucleus of this effort is in its curricular development program.

The program assumes that the behavioral sciences contribute important concepts and modes of inquiry which would be useful in teacher preparation. It also assumes that early, continuous, and systematic client-contact by prospective teachers in a Clinic-School Network can provide the macroscopic as well as the microscopic conceptualizations of teaching. The program is broader than professional education, drawing upon general-liberal education experiences during the preservice period, and extending well into the teacher's in-service career. While this extended concept of the scope of teacher education was explicitly detailed in our Phase I report, the present study is limited by request basically to undergraduate education.

In-service education, however, is such an important element in the program that some aspects are described as they relate to preservice teacher preparation.

The clinical style explicated in Phase I has guided the formulation of this study, and is projected to aid in program development and to serve as a model for students and faculty.

Management. During the experimental period, the Program Development Subsystem would be responsible for developing and delivering experiences for teacher trainees. Some responsibilities of this subsystem are to:

1. Determine the type, kind, and number of instructional modules to be developed
2. Relate instructional modules to appropriate behavioral objectives
3. Secure competent persons to develop the content and delivery method of each instructional module
4. Develop an instructional delivery system for presentation of various module types
5. Review and implement program changes which have been indicated by evaluation feedback
6. Assess and evaluate major shifts in program emphasis which need to be reflected in subsequent modules
7. Determine, review, and revise the number of program tracks required to meet individual student needs, backgrounds, and aspirations
8. Give continuous evaluation to the criteria for student entrance into the program to improve inputs to teacher education
9. Coordinate preservice and in-service curricular elements
10. Develop, in conjunction with the instructional resource support system, appropriate instructional materials

While a foolproof plan for educational development has yet to be invented, experience of those deeply involved in the process and the basic tenets of systems analysis provide some basic guidelines. The guidelines cited by the Southwest Regional Laboratory for program development offer a useful paradigm for model building. These developmental functions are: 1) Instructional Design, 2) Test of Prototype, 3) Production, 4) Quality Verification, 5) Instructional Technology, and 6) Staff Training. The first four functions are sequential, although not strictly linear, whereas Instructional Technology and Staff Training are coordinate functions permeating all development phases. Discussion of each of these areas, and specific recommendations related to BSTEP, are included in Chapter 2.

One of the developmental objectives is to provide three alternative activities in which a student could engage for each modular objective. These alternative activities leading to the same objective provide opportunities for more personalization of instruction. They also provide alternatives for students who were unsucessful in attaining the desired performance with one activity.

The proposed instructional management system is designed to function primarily within components, with linkages among components. After a student has selected or has been assigned to a component, a pre-test is administered to measure his pre-experience attainment of behavioral objectives associated with each of the component's modules. The pre-test is scored and analyzed using a special item analysis which compares the student's specific responses with various sets of instructional objectives. A decision is then made regarding assignment of the most appropriate set of modules to bring the student to the desired performance level upon completion.

Upon completing the experiences in the assigned modules, the student takes a parallel form of the pre-test. The purpose is again diagnostic, permitting the student to identify needed areas for strengthening. A schematic representation of this system is provided in Figure 1:3. The critical step is a test of each sub-test against a criterion score previously established. A score higher than or equal to the criterion would allow the student to complete the module. A rating less than the criterion would initiate a branching into a sequence of alternate instructional modules designed to assist the student to reach the criterion behavior.

Group activities are not precluded in the individualized program described above. Indeed, individualized learning is not synonymous with insular learning. Man is a social animal, and often learns best in group situations. Thus, the program includes many group-centered activities as well as individually prescribed modules, and is more adequately referred to as a personalized program.

Systems for Program Development. A System for program development, trial, and redevelopment of components must be scheduled to meet the demands of program objectives and resource allocation. The following list summarizes the major considerations in establishing program development sequences:

1. Provision for meeting the criteria of the developmental design

2. Relation between program development schedule and student

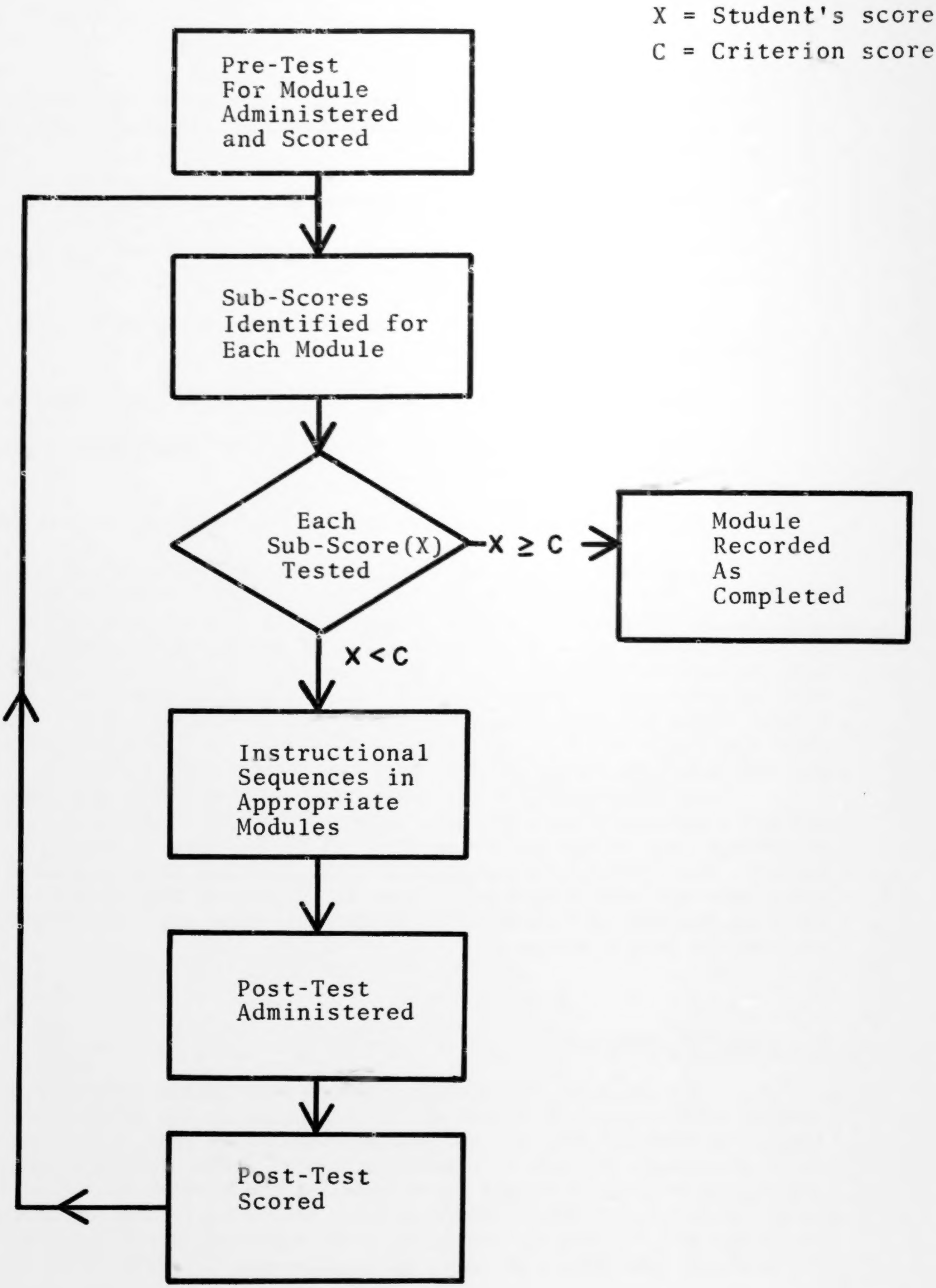

X = Student's score
C = Criterion score
Pre-Test For Module Administered and Scored
Sub-Scores Identified for Each Module
Each Sub-Score(X) Tested
X ≥ C
Module Recorded As Completed
X < C
Instructional Sequences in Appropriate Modules
Post-Test Administered
Post-Test Scored

Figure 1:3 Module Management System

curriculum sequence

3. Utilization of faculty resources from various departments on a planned distribution of load over the initial development periods

4. Distribution of fiscal resources over developmentperiod

5. Provision for early component development of new and untried approaches

6. Introduction of professional components early in program development

7. Adequate redevelopment time provided for complex components

8. Each component tested and redeveloped at least three times by the end of the fourth year

9. All initial development completed by end of the second year

A summary of program development activities is found in Table 1:1. Three activities are indicated for each component by years in the development period. These are 1) initial development (D), 2) prototype testing with students (T), and 3) redevelopment (R). To meet the development specifications, some initial testing of components would be done with students who are not in the BSTEP experimental groups. Such testing periods are marked with an asterick (T*). The subscript for T and R (T_1-R_1) indicates whether this is the first test and redevelopment period (T_1- R_1) or the second cycle (T_2-R_2).

In studying Table 1:1 the reader must recognize that components are not equally weighted in their emphasis, or extent of term-credit weightings (see Volume I, Section II p. 53 of the Phase I report). Further, the specific components and their relation to specialized areas have not been finalized. Since it is assumed that this is an evolving process, modification of program elements and their sequence is inherent in the design.

Clinical Experiences

The Clinical Experiences involve progressive intensity of contact with elementary school pupils beginning in the prospective teacher's freshman year and concluding with a full year of internship in an elementary school; clinical experiences divided between simulated and actual; alternate routes for generalist and specialist teachers; single-purpose performance-based modules as the basic unit of learning-teaching; and differentiation of clinical experiences for those planning to teach at preschool, primary, and middle-school levels. The clinical

TABLE 1:1 COMPONENT DEVELOPMENTAL SEQUENCES

Components[1]	Year of Development (Sept.-August)				
	Pre-implementation	First	Second	Third	Fourth
GENERAL-LIBERAL EDUCATION					
Humanities I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Humanities II		D	T_1-R_1	T_2-R_2	T_3-R_3
Humanities III			D-T_1^*-R_1	T_2-R_2	T_3-R_3
Social Science I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Social Science II		D	T_1-R_1	T_2-R_2	T_3-R_3
Social Science III			D-T_1^*-R_1	T_2-R_2	T_3-R_3
Natural Science I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Natural Science II		D	T_1-R_1	T_2-R_2	T_3-R_3
Natural Science III			D-T_1-R_1	T_2-R_2	T_3-R_3
Modes of Inquiry Seminar			D-T_1^*-R_1	T_2-R_2	T_3-R_3
SCHOLARLY MODES OF KNOWLEDGE					
Mathematics I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Mathematics II			D-T_1-R_1	T_2-R_2	T_3-R_3
Fine Arts I		D	T_1-R_1	T_2-R_2	T_3-R_3
Fine Arts II			D-T_1-R_1	T_2-R_2	T_3-R_3
Social Science		D	T_1-R_1	T_2-R_2	T_3-R_3
Communication		D	T_1-R_1	T_2-R_2	T_3-R_3
Linguistics		D	T_1-R_1	T_2-R_2	T_3-R_3
Science			D-T_1-R_1	T_2-R_2	T_3-R_3
Children's Literature			D-T_1-R_1	T_2-R_2	T_3-R_3
HUMAN LEARNING					
Human Learning I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Human Learning II		D	T_1-R_1	T_2-R_2	T_3-R_3
Human Learning III			D-T_1^*-R_1	T_2-R_2	T_3-R_3

[1] Credit weighting not necessarily equal for components. Refer to original BSTEP Report.

(Cont.) Components	Year of Development (Sept.-August)				
	Pre-implementation	First	Second	Third	Fourth
PROFESSIONAL USE OF KNOWLEDGE					
Mathematics I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Mathematics II			D-T_1^*-R_1	T_2-R_2	T_3-R_3
Reading I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Reading II			D-T_1^*-R_1	T_2-R_2	T_3-R_3
Social Science		D	T_1-R_1	T_2-R_2	T_3-R_3
Natural Science			D-T_1^*-R_1	T_2-R_2	T_3-R_3
Language Arts		D	T_1-R_1	T_2-R_2	T_3-R_3
CLINICAL EXPERIENCES					
Clinic I	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Clinic II		D	T_1-R_1	T_2-R_2	T_3-R_3
Clinic III		D	T_1^*-R_1	T_2-R_2	T_3-R_3
Clinic IV			D-T_1^*-R_1	T_2^*-R_2	T_3-R_3

Key

D = Initial Development
T-R = Test and Redevelop
T_1-R_1 = First test and redevelop (R_2 = Second, etc.)
T^* = Test with non-BSTEP students

program comprises five major areas of emphasis: Exploring Teaching, Career Decision, Analytical Study of Teaching, Pre-Internship, and Internship.

Exploring Teaching ties academic background studies to professional preparation by early exposure to children, schools, and community agencies. Experiences include those in actual classrooms, observation of non-academic school functions, observations and assignment at community institutions and agencies, and exposure to a variety of cultures including that of the inner-city.

The Career Decision phase is designed to encourage early, rational self and faculty appraisal of teacher candidates' interests and potentials in relation to the professional demands of teaching in elementary schools. Alternate routes for generalists and specialists are investigated. Information about children and their behavior, the teaching-learning process, and simulated and counseled self-examination of personal teaching styles are involved. Experiences include observation, tutoring, simulation, interviews, lectures, and group discussions.

Analytical Study of Teaching, as a stylized form of human behavior, is presented as a framework for professional skills to be perfected in future climate analysis based on systems of training in interaction techniques and classroom observation. Simulated experiences are direct or self-programmed with closed-circuit television, films, and audio-tapes. Micro-teaching with small groups of pupils for short periods of time deepens the analysis.

Pre-Internship and Internship in the proposed Clinic-School Network, part of which is already in operation between Michigan State University and Michigan school districts, provide simulated and actual field experiences designed for systematic application of learned knowledge, skills, and strategies to regular elementary school teaching. Interaction of school systems and BSTEP involves school and university faculties, intern consultants, and BSTEP pre-interns and interns. Pre-interns engage in visiting practicum to acquire teaching techniques and strategies and a rationale for teaching and teamed field experiences for continuous practice in planning and evaluating. Internship shifts from practice to full-time reality and, for the first time, gives the trainee a year of total responsibility for the on-going program in a regular classroom from the first day of school. Intern consultants and assigned university faculty support and provide a referent group to guide interns' professional developments.

Curriculum Components

Three components were studied and analyzed to consider their intent and content, and the human, material and financial resources needed to implement General-Liberal Education, Scholarly Modes of Knowledge, and Professional Use of Knowledge, while moving toward an essential working approachment between the arts and sciences.

Because of limits on time and human resources, one component in each area was studied as a paradigm of the whole. Humanities was examined as representative of General-Liberal Education, natural science as representative of Scholarly Modes of Knowledge, and Social Studies as representative of Professional Use of Knowledge. In each instance, the analysis for feasibility probes the background and rationale, makes recommendations for extension or revision of the content, and suggests steps for implementation. Personnel, facilities, materials and financial needs are discussed for each. These needs are based on careful study of the existing modular structure coupled with projections of likely changes. In Section V, these needs are translated into budgetary figures.

Instructional Resources Support System

BSTEP requires an extensive Instructional Resources Support System. Individualized experiences through actual and simulated contact with children abound. Tutorial experiences with individual children, micro-teaching with groups of three or four children, and instruction of larger groups are among elements involving actual contact of the preservice teacher with pupils. Filmed episodes, simulation, and other problem-solving experiences are clinical in nature, but do not involve direct contact with children. The Instructional Resources Support System has two major functions: 1) to assist program developers by producing required instructional materials, and 2) to provide for delivery of individualized modules to BSTEP students.

The basic facility of the IRSS is the Learning Resources Center (LRC). Carrels and simulation laboratories for students are housed in LRC, along with collections of children's trade books and instructional materials.

The LRC provides specialized media services to faculty who are developing instructional modules. Staff members are available to work on program development teams as media specialists who are also knowledgeable in elementary education. The Center also assists in faculty orientation and in-service education by providing aid in developing appropriate media and in housing individually completed portions of that program.

Supporting the activities of the proposed Learning Resources Center are several existing university media facilities which would be extremely important in securing or developing needed materials for BSTEP. These include the Instructional Media Center, an agency servicing the total campus and housing a major film library, graphics center, and still and motion-picture production laboratories. Closed-circuit Television provides a multiplicity of TV services. The Materials Center of the Science and Mathematics Teaching Center specializes in mathematics and science materials, includes collections of materials, shop facilities, and access to laboratory and electronic equipment. In the College of Education, the Instructional Resources Center houses a library and attached study space, work rooms, and collections of children's literature, recorded materials, teaching machines, and two-and three-dimensional instructional devices. Adjacent to IRC is the USOE/MSU Regional Instructional Materials Center for Handicapped Children and Youth. In addition to an extensive collection of special education materials, the center employs a computerized information retrieval system as a catalog which is similiar to one recommended for BSTEP. These major facilities, and some others not enumerated, were appraised to establish their significance for BSTEP development and their availability.

Maintaining Program Relevancy

History is filled with stories of movements, programs, and ideas which lost their viability because they did not keep pace with changing times. A program that is relevant and on the cutting edge of innovations in 1970, can be completely out-dated by 1980.

The design of BSTEP includes numerous checks to avoid such a failure. The clinical behavior style, previously described, employs a cyclical approach which taps the essence of the real world of teaching and projects it against theoretical propositions; further, it provides a model for teaching, for program development, and for maintaining program relevancy.

The formal evaluation system is designed to improve the efficiency and effectiveness of modules and components when compared with general program objectives, with teacher needs, and with alternate teacher preparation models. The administrative structure has been designed to meet the current needs of this program in MSU, to responsively and responsibly meet new challenges, and to alter its structure and procedures as new dimensions are added.

While program relevancy has received considerable attention throughout the program, two aspects are singled out here for special attention, analysis of the future, and faculty orientation and in-service education.

Analysis of the Future

To remain relevant, a program must consciously consider the potentialities of a changing society; this effort's pertinence cannot be left to chance or whim. Numerous agencies and projects, (Hudson Institute, Education Policies Centers, etc.) are currently engaged in projecting potential futures. These efforts can and must be tapped and utilized as sources for program evaluation and development. It would be foolish to duplicate these massive efforts, but it would be fatal to ignore them. Judicious use of consultants, panels, and seminars is recommended for direct program inputs. Such efforts are designed not only to maintain currency of the program, but also to reflect student attitudes and responses to change.

Eighteen charts on futurist possibilities related to education are included in Chapter 6. Each chart shows an overview which describes a possible development and its consequences, followed by its educational outcomes, impact on school personnel, impact on teacher-preparation programs, and illustrative behavioral-science responses by educational institutions.

To keep the teacher-education faculty knowledgeable and realistic about present and future states of social and educational needs, the following recommendations are made:

1. Periodic faculty symposiums on the future, in 1970-71 and succeeding years, with competent futurists invited to discuss possibilities, likelihoods and inevitabilities over short- and long-range periods

2. Dissemination by a responsible on-campus futurist of relevant scientific and technical information for regular examination of impacts of future developments on social and educational needs and practices

3. Development of reflective and speculative capacities in teacher-trainees, with emphasis on understanding, learning experiences, course content, and flexibility to adapt to changing needs and social designs

Faculty Orientation and In-Service Education

The faculty of BSTEP will be drawn from many educational agencies, including seven colleges in Michigan State University, elementary schools, professional organizations, and community agencies.

While such a multiplicity of inputs should strengthen the product and lead to continual refinement, it presents problems of focus and articulation. By the very nature of the changes being proposed in BSTEP it is imperative that faculty members have opportunities for orientation to new strategies, and modification of present teaching techniques. An extensive orientation and in-service education program has been designed to assist faculty to strengthen commitment, understand general program objectives, write behavioral objectives, utilize appropriate evaluation techniques, employ effective instructional technology, and understand the program organization.

Operational procedures are defined in Chapter 7 for faculty assignment, preparation and participation in BSTEP, with status and contacts maintained in home departments, schools, or agencies.

A study conference is proposed to orient assigned faculty to BSTEP and to reexamine the roles, capabilities, and responsibilities of university personnel and material resources. The conference would feature the intent and content of BSTEP, the role of the university, self-evaluation in terms of roles and attitudes, and preparation of learning-experience modules.

Independent study and self-improvement also would be encouraged through examination, criticism, revision and extension of BSTEP by individual faculty members with such devices as packages of pertinent materials, visits to elementary schools, and pilot-testing of BSTEP modules in controlled circumstances.

Continuing evaluation of both BSTEP and the faculty orientation and in-service education program is advocated.

Organization and Administration

The purpose of the organization and administration of BSTEP is to facilitate the design, development, trial, and evaluation of an innovative program. The many resources inherent in a large university can be tapped for optional input: resources such as a wide variety of faculty competencies, extensive media production units, a network of clinic-schools, and research personnel and facilities. Once focused on development of the teacher education program, the resources are more readily replicated in other institutions. But for that development, an administrative unit must be carefully designed to effectively mobilize the total resources in an institution such as MSU.

The organization of BSTEP within Michigan State University was designed by representatives and administrators from several colleges involved in teacher education. The task was not simple. In the seven colleges cooperating in the BSTEP effort, there are 48 departments, 7 schools, and 24 institutes and centers. They grant the major share of degrees awarded by the university. Aganist the backdrop of such a complex system of university and faculty control and management of academic programs, new proposals must be cast in planning, organizing, and implementing administrative design and structure. The plan briefly outlined below, and detailed more fully in Chapter 8 has evolved from extensive discussion and revision, has been reviewed by concerned deans and faculty representatives, and is judged to be an effective, workable structure in this university. Developments of a similiar structure in another university would require, we believe, the same process of development.

The direction of BSTEP involves two basic functions: 1) curriculum development, and 2) operational-administrative. These functions and the organizational unit involved with each are diagrammed in Figure 1:4.

Administration

The program will be supervised by the Educational Policies Council which includes the dean of each of the seven cooperating colleges. They would meet regularly to consider policy questions, coordinate joint college efforts, recommend resources for various needs, and encourage their senior-faculty to contribute to program development. For the developmental function, the Educational Policies Council would vest more direct coordination in the BSTEP Coordinating Committee. Members of this committee would be appointed by their respective deans, and work with the BSTEP Director on matters directly concerned with programs, instruction, and development.

BSTEP students will be selected from among those whose professional goals are careers in preschool or elementary school teaching. The two departments of Family and Child Sciences in the College of Home Economics, and Elementary and Special Education in the College of Education enroll students majoring in these two programs. Selected faculty from these two departments will be responsible for advising BSTEP students. The School of Teacher Education would be responsible for fiscal management of BSTEP. The preceeding administrative structure was designed to achieve broad representation from participating colleges with pin-pointed responsibility for action.

Within the specific organizational structure of BSTEP, the Program Development Subsystem is the largest and most significant. This subsystem is responsible for developing and delivering instructional modules. Six committees within the subsystem are designated, representing the five instructional areas plus the Analysis of the Future committee whose responsibility is to insure program relevancy. Supporting

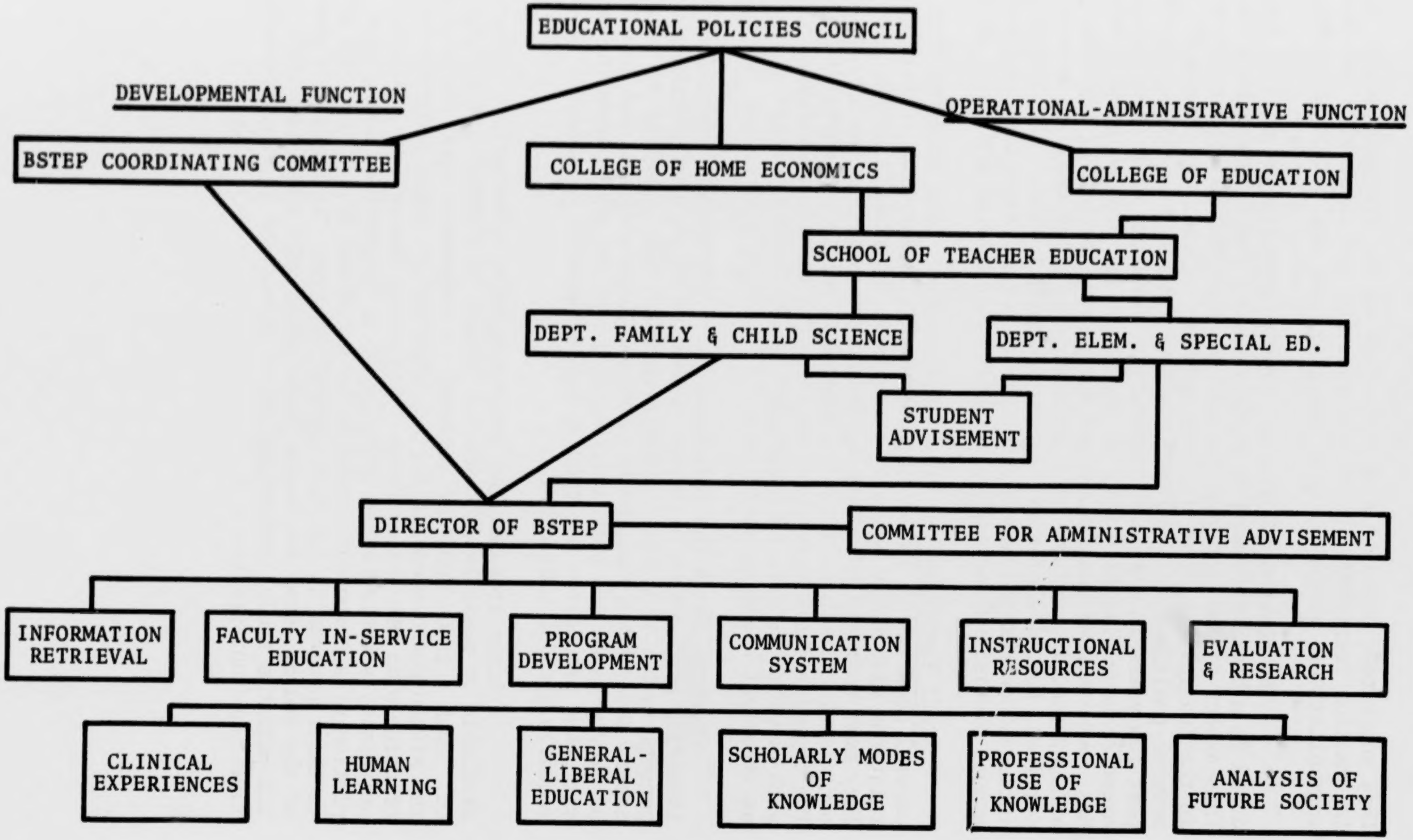

EDUCATIONAL POLICIES COUNCIL
DEVELOPMENTAL FUNCTION
OPERATIONAL-ADMINISTRATIVE FUNCTION
BSTEP COORDINATING COMMITTEE
COLLEGE OF HOME ECONOMICS
COLLEGE OF EDUCATION
SCHOOL OF TEACHER EDUCATION
DEPT. FAMILY & CHILD SCIENCE
DEPT. ELEM. & SPECIAL ED.
STUDENT ADVISEMENT
DIRECTOR OF BSTEP
COMMITTEE FOR ADMINISTRATIVE ADVISEMENT
INFORMATION RETRIEVAL
FACULTY IN-SERVICE EDUCATION
PROGRAM DEVELOPMENT
COMMUNICATION SYSTEM
INSTRUCTIONAL RESOURCES
EVALUATION & RESEARCH
CLINICAL EXPERIENCES
HUMAN LEARNING
GENERAL-LIBERAL EDUCATION
SCHOLARLY MODES OF KNOWLEDGE
PROFESSIONAL USE OF KNOWLEDGE
ANALYSIS OF FUTURE SOCIETY

Figure 1:4 Administrative Organization Design

this subsystem, and in a staff relation to it, are specialists in information retrieval, faculty orientation and in-service education, communications, instructional resources, and evaluation and research.

The above described university organization must be considered in a broader framework which includes the Clinic-School Centers. This aspect of the organization has not received extensive attention in the feasibility study for two reasons: 1) it was described from several positions in the Phase I report; and 2) experiences over the past few years in similiar cooperative endeavors with other educational agencies have clarified many of the potential problem areas. MSU has evolved numerous reciprocal agreements through 17 regional student teaching centers, 6 continuing education centers, consultant services, and 11 Elementary Intern Program centers. EIP, for example, includes contractual agreements with 52 school districts, including annual provisions for employing nearly 300 interns and their consultants.

Staff Involvement. Since staff members will be drawn from several departments in development and implementation activities, their relations with BSTEP and with their home departments become significant. They must maintain a continuing relationship within their own department in areas such as tenure, promotion, salary and sabbatical leaves. The organizational structure coupled with formal and informal liaisons with departments have been designed to foster the concept of this as an important academic activity.

Grading. With the initiation of a new teacher-education program involving performance criteria, a modular curriculum grouped by components rather than in a course structure, the extension of clinical experiences throughout the student's college program, and involvement of many persons and organizations both within and outside the university, the procedures for grading and assignment of academic credit requires special consideration.

After studying the various grading alternatives currently available or possible, the use of "credit-no credit" grades is recommended. Such a grade would be assigned to components upon completion of the stated performance criteria. Performance-based programs do not coincide with time-based terms. Following discussions with relevant university-administrative offices, it is recommended that, upon completion of a component, students be permitted to add the next component to their program at any time during the term. "Incomplete " grades at the end of terms for uncompleted components complement this procedure and permit a truly performance-based curriculum to function within a time-based university.

Selection and Retention of Students

Selection and retention of students for a new program involves publicity, selection procedures, and student advisement. In projecting BSTEP, experience gained in previous ventures could eliminate some pitfalls. Therefore, student retention patterns in one of the recently-opened residential liberal arts colleges within MSU were studied. Approximately 75 percent of the students remained at the end of each school year. Five patterns of attendance were identified. Students who were in continuous attendance until graduation were designated as accelerators, regulars, and late graduates. Those not in continuous attendance until graduation were designated as interrupters and discontinuers. Of those who graduated, 78.3 percent were in continuous attendance and 21.7 percent interrupted their attendance for one or more terms. The regular pattern predominated, with 54.8 percent, while late graduates comprised 13.1 percent of the sample and 10.4 percent accelerated their program. After 12 terms, 69.2 percent of the students had graduated. These data were projected for BSTEP, assuming an entering freshman class of 100 each year. The implications of these projections for program development and for a performance-based curriculum cannot be underestimated.

Dissemination methods for information on the new program and student recruitment procedures are outlined. Generally, they take advantage of the numerous channels already employed by MSU to acquaint prospective students with the university. In addition, the facilities of the various educational centers throughout the state and the Clinic-School Network would be utilized.

If BSTEP is to be functional beyond the specific sample of students it serves, then that sample should be representative of the diversity of American society. High priority is recommended to maintaining a student mix which includes:

1. Students from urban, small towns, and rural backgrounds
2. Broad racial and ethnic representation
3. Broad range of academic achievement potential
4. Students with diverse and unusual interests
5. Wide range of socio-economic backgrounds
6. Representative ratio of males and females

Continual assessment of student progress is important in a performance-based curriculum. In the Phase I report, the section on information retrieval delineated "flagging" procedures for identifying students having program difficulties. In the present report these are supplemented by recommendations for evaluation and counseling of students.

Information Retrieval

In the Phase I report, an information storage and retrieval system was described and employed for module storage and analysis. A major section of that report (Volume III Section X) plus part of Volume III Section IX was devoted to that aspect of the project.

In the present report, five major categories of documents which could be processed through the IR system are considered. The first category relates to students; their applications, demographic data, personal tests, periodic evaluations of student by faculty, and program assessment observations by students. Information in this file should avoid unnecessary duplication with the University Administrative Data System since the BSTEP IR system can interface with that system.

A second class of documents is the description of experience modules. A data bank of about 2,700 modules was created in Phase I. This file will change substantially as new modules are added and others are modified or deleted, but the IR system permits an up-to-date accounting of the program.

A third class of documents comprises an inventory of instructional materials from which faculty and students can draw in the Instructional Resources Support System. The fourth class of documents relates to faculty and their contributions to the program over a period of time, while the fifth class relates to expenditures of funds for materials, equipment, and personnel.

One procedure for handling data is to interface a microfilm system with the IR system. This procedure and associated equipment, such as optical scanners and magnetic ink characters, are extensively explored in this report.

The ERIC system provides data input regarding documents which otherwise would be unobtainable. The use of this system is briefly delineated in Chapter 10, and is explicated more fully in a Postion Paper by the Director of the ERIC Clearinghouse on Teacher Education, Dr. Joel Burdin.

Evaluation

A systematic program development endeavor, such as BSTEP, is dependent upon an integrated, functioning evaluation system.

A major section in the first BSTEP report was devoted to the process and organization of evaluative services. In the present report, evaluation is considered in every chapter as it interrelates with that section of the program. In one chapter the process of selecting and advising students is assessed. The faculty orientation and in-service education program includes a major emphasis on assessing its impact on faculty operation. Administrative services are subjected to careful scrutiny. Program Development includes a number of specific evaluation recommendations.

The emphasis on evaluation is not accidental. The clinical behavior style, considered important for student decision-making and action, prevades the recommended faculty operation and program development. Careful evaluation is the sine qua non in the development process of BSTEP.

In BSTEP, evaluating occurs at three levels and on several dimensions. At the module level, the logical relationships of objective-experience-evaluation are assessed to determine if indeed the experiences can result in attainment of the required objectives and if the evaluation procedures are measuring objective performance.

Modules are grouped in clusters called components. Assessment is made to determine the logical contribution of module objective to the more general component objective, and to assess the contribution of both to the general program objectives. Some questions explored include:

1. Do component objectives contribute to program objectives?

2. Are objectives consistent, viable? Are they necessary and sufficient?

3. Do they function within the Behavioral Science paradigm?

4. Does the program prepare teachers to employ the clinical behavior style?

5. Does the program prepare teachers for the future as well as present?

6. Does the program provide sufficient tracks for today's schools?

7. Is the distribution of students in each track realistic?

The general objectives are to be regularly reconsidered by the BSTEP Staff; by representatives of the profession; by committees composed of men of distinction -- cultural; industrial, scientific and spiritual; and by future-oriented consultants. The purpose of these varying assessments is to maintain the relevancy of the program within a changing environment. They too would consider the balance among various program elements.

The BSTEP Information Retrieval System provides for and permits assembling relevant data from numerous sources for evaluation purposes. Searches of the program may be done by components, using file terms such as objective, experiences, etc., to examine content and approaches for continuity and balance. For example, all modules using simulation as a teaching technique could be located and printed by requesting a print-out using simulation as the search word. Observation, interaction analysis, the Civil War, John Dewey, or discovery could be focuses of other searches.

A few of the evaluation techniques envisioned include specialized research studies comparing costs and benefits of several approaches by a student to a particular modular objective. These studies would assess, for example, simulation, small group discussion, and lecture as modes of instruction with selected modules.

During the student's preservice education, he would be asked, after he completed a component to name the most important modules included in it. Those identified would be accumulatively stored in the IR system; then, near the end of his internship, his unique set of priority items would be discussed with him. Which of the modules, considered important at the time they were taken, remain significant to him as a teacher? Were there other program aspects not considered important at the time they were experiences, but during internship were rated as significant program elements? Perhaps the latter modules require better packaging, a change in focus, or more emphasis to make them more attractive, in order to motivate students to perceive them differently.

During the initial development period, only part of the elementary education majors at MSU would participate. Other students would form control groups for various studies of program effectiveness.

The internship provides a logical capstone, not only for the program, but also for the evaluation. The individual student's own college preparation program is known; the situation in which he is teaching can be assessed and described, and his extent of our present testing programs. During internship, because of close association with an intern consultant, students problems, frustrations, and suitable modes of inquiry and instructional strategies are more easily determined. This is an important testing period for behavioral science concepts and, since it is the first year of full-time teaching with responsibility for a group of children, it provides the basis for realistically evaluating the whole program in terms of individual students.

Benefit/Cost System

One further aspect of this area is explored in a benefit/cost system. With a modular curriculum system and an extensive evaluation system, would it be possible to tie these together into a benefit/cost system? After studying several major efforts in the United States and Canada, a system fitting the specifications of BSTEP was devised.

The benefit/cost system includes two interrelated subsystems: evaluation and cost analysis. The evaluative process, described above, is designed to produce information on the effectiveness of various strategies in the program. During program development, alternative strategies to achieve program objectives will be designed, tested, implemented, and evaluated. Each strategy involves a unique allocation and utilization of program resources. A corresponding unique set of costs can be associated with each strategy.

Three interrelated sectors of the program are identified in the cost analysis subsystem: academic services, student population, and resources. Sub-categories within each sector provide classifications for collecting resource utilization data.

Academic services can be divided and subdivided by program area, by component, and by module. Students can be classified by career preference (preschool, primary, or middle grades), general classroom teaching or specialist, and year of entry into the program. Resources may be categorized as personnel or physical.

The student population is viewed for conceptual purposes as generating demand for the academic services provided in the program. Personnel and physical resources are combined to produce the services demanded by the student population. The basic operational purpose of the cost analysis system is to describe the quantity of resources required to produce each of the units of academic service. The cost of supplying units of service can be determined by imputing prices to each unit of resource.

The combination of evaluation and cost analysis form the basis for the benefit/cost system. The technical feature of that system, and its implications for BSTEP, are outlined in Chapter 11. The chapter concludes with a statement of resources required for implementation of the system.

PERT

The Program Evaluation and Review Technique (PERT) is a useful management technique. It portrays graphically the tasks to be done, the order in which they are to be undertaken, and the interrelation among them; it communicates to the staff and concerned persons the dimensions and scope of the endeavor, and the extent to which the project is progressing as planned. It also helps to anticipate the consequences of management decisions at an earlier point in time. Because of its relevance as a management tool, the BSTEP staff is committed to use PERT as a planning and control technique for the project.

PERT has been employed to describe the model-building and feasibility phases of BSTEP; and milestone networks for these two phases have previously been presented in this chapter. The PERT chart following this discussion is an abbreviated milestone network for the initial development cycle. In succeeding chapters, more extensive networks trace the development of the 1) Clinical Experiences, 2) General-Liberal Education, 3) Instructional Resources Support System, 4) Systematic Analysis of Future Society, 5) Faculty Orientation and In-Service Education, and 6) Administration.

In the PERT network, circles represent events, specific definable accomplishments in the networks which take place at a specific point in time. The expected time required to complete the activities between two events is marked (t_e). This expected elapsed time is designated in working days, thus the activities associated with t_e= 10.0 are estimated to require 10 working days to complete. The expected time for completion of an event is marked (T_E). This time is equal to the sum of t_e for the longest path from the beginning of the program to completion of the given event; i.e., T_E=81.0 indicates that this event is expected to be completed 81 working days after the project epoch. T_E=0 indicates the initial event which signifies the beginning of the network. In the present projection for implementation, the appointment of the Advisory Committee by the seven college deans initiates the project. Since implementation actually is the third phase of the project, this time was arbitrarily established as a meaningful one for initiating Phase III.

The critical path identifies the series of activities and events which are linked together from the beginning of the project to its conclusion and which have the least slack time. This is the longest, the most time-consuming path through the network. These events and activities have the most rigid time constraints in completing the project. In the networks which follow, the critical path is graphically displayed on the network by a double line. Symbols used in the PERT charts are summarized below.

Circles Represent events

⟶(	Represent activities leading to events
t_e	Expected time for completing activities leading to events

T_E	Earliest expected time for completing event
$\Longrightarrow$	Critical Path
T_L	Latest time an event can be completed and complete the project on time
t'	Slack- the difference between the latest time and expected time estimates

As the project is implemented, the networks and time estimates included herein would be updated to reflect progress, delays, and changes in plans. As currently projected, a critical day is $T_E=123.0$, for this is the earliest time from project initiation to beginning the instruction of the first pilot class. Should the project begin at an earlier date, some slack time can be built into the design; if later, alternate means must be ascertained to shorten this period. Analyzing events and activities along the critical path provides a beginning for necessary schedule tightening or reallocation of resources.

When the specific dates for project initiation and initial pilot class implementation are know, earliest expected times (T_E) can be translated into calendar dates, with a scheduled date (T_S) assigned to significant events. When T_E days are translated into T_S dates, the timing of T_E may be altered from that previously assessed. For example, if filming classroom scenes were scheduled so that they occur during vacation periods, the activity might have to be rescheduled earlier, the project completion date extended, or the filming accomplished with summer school pupils or with children brought together in contrived classes. The availability and optimum use of personnel, university and elementary school schedules, and the accessability of equipment and materials all could alter the PERT expectations when T_S are known. Because of these and many other unforeseen contigencies, PERT networks are constantly revised during implementation.

Supporting Documents

The proposals made herein have undergone a series of evaluations, including assessments by special consultants of individual task force recommendations, and formal examination of the total project at several stages of development by the BSTEP staff and by consultants. However, the entity of the total model, with recommendations and changes from numerous sources, becomes apparent only as the present report is being completed. To consider this report, and its implications for the program described a year ago and since revised, an evaluation conference is planned for March, 1970. Several consultants, including experts in teacher education, university administration, and management design, will draft recommendations for improvement and discuss these at the conference. Project leaders, contributors to the model design, elementary school representatives and others involved in subsequent implementation of the model also will participate. The report from that conference will be published as part of the present endeavor.

In addition, several position papers supporting recommendations have been written and are available upon request. These include:

Notes on Evaluation of Behavioral Science Teacher Education Program Modules

by Eva L. Baker, Assistant Professor of Elementary Education, University of California, Los Angeles

Instructional Management System

by Norman T. Bell, Associate Professor of Educational Psychology, Associate Director of Learning Systems Institute, Michigan State University

Information Capabilities Needed in School Personnel Preparation

by Joel L. Burdin, Associate Secretary, American Association of Colleges of Teacher Education; Director, Educational Resources Information Center (ERIC) Clearinghouse on Teacher Education, Washington D.C.

Futurism: A Needed Process in School Personnel Preparation

by Joel L. Burdin

Planning for Young Children's Science Education

by Verna Hildebrand, Assistant Professor, Department of Family and Child Sciences, Michigan State University

Guidelines for BSTEP Budgeting

by Olaf Isachsen, Graduate Assistant in Administration and Higher Education, Michigan State University

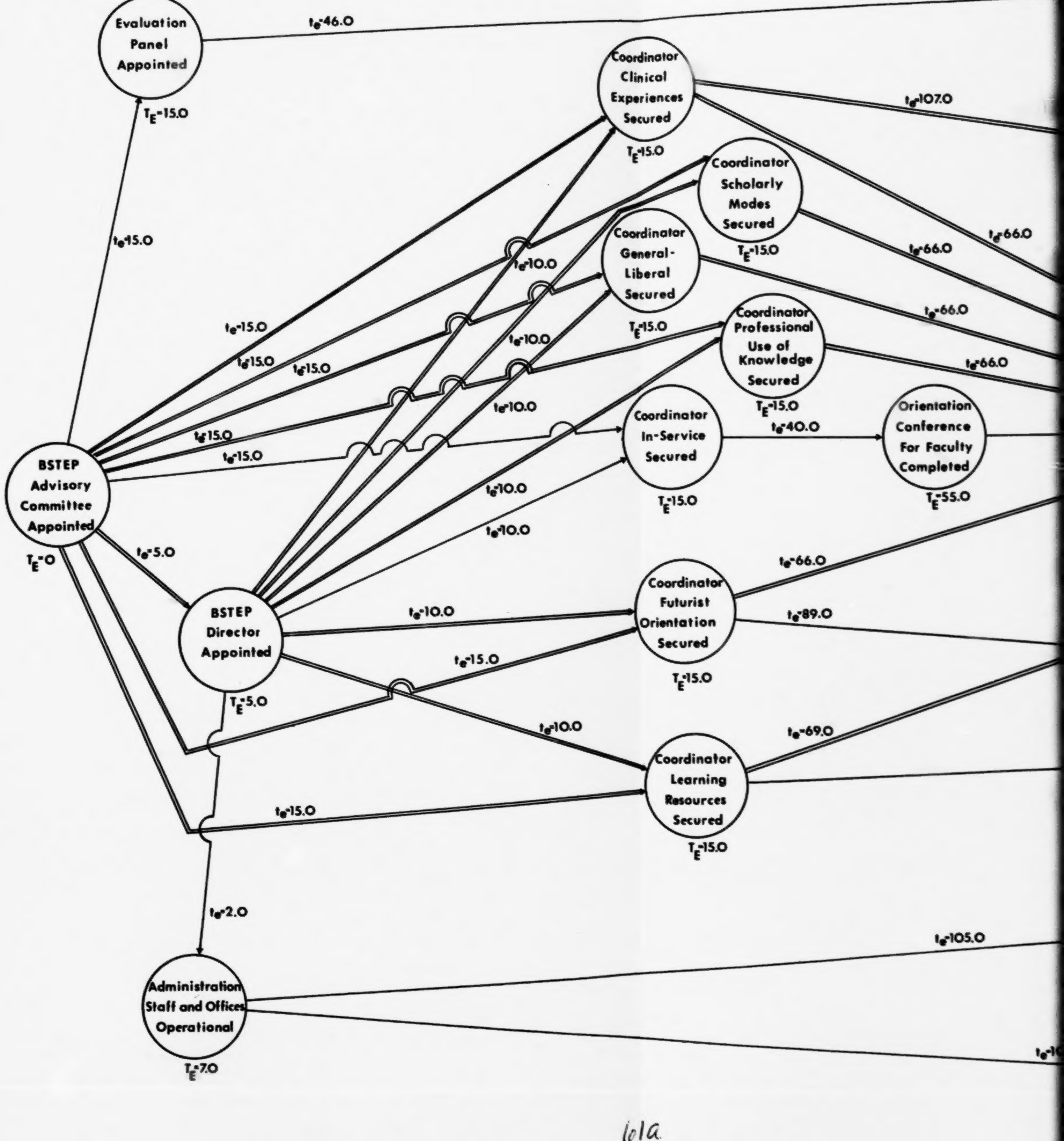
Development and Analysis of a Classification System Based on the Types of Student Experiences Presented in the BSTEP Modules

by Frederick A. Staley, Graduate Assistant, Elementary Education, Michigan State University

BSTEP Evaluative Design

by Clessen Martin, et al, Research Professor, Elementary and Special Education, Michigan State University

BSTEP IMPLEMENTATION PHASE - MILESTONE NETWORK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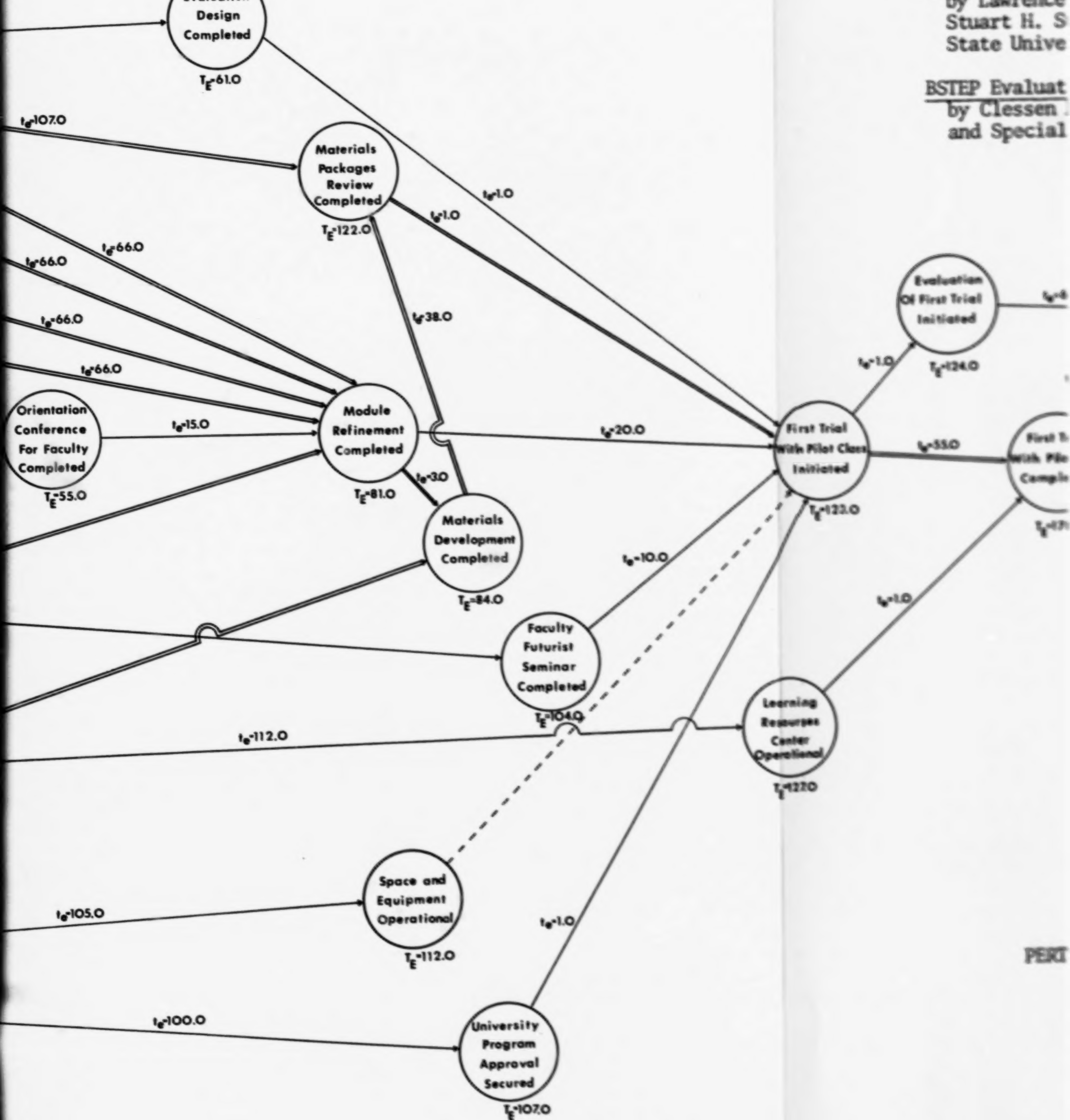
t_e-46.0
t_e-15.0
Coordinator Clinical Experiences Secured
T_E-15.0
t_e-107.0
t_e-66.0
Coordinator Scholarly Modes Secured
T_E-15.0
t_e-66.0
Coordinator General-Liberal Secured
T_E-15.0
t_e-66.0
Coordinator Professional Use of Knowledge Secured
T_E-15.0
t_e-66.0
Coordinator In-Service Secured
T_E-15.0
t_e-40.0
Orientation Conference For Faculty Completed
T_E-55.0
t_e-10.0
t_e-10.0
t_e-10.0
t_e-10.0
t_e-10.0
t_e-15.0
t_e-15.0
t_e-15.0
t_e-15.0
t_e-15.0
BSTEP Advisory Committee Appointed
T_E-0
t_e-5.0
BSTEP Director Appointed
T_E-5.0
t_e-10.0
Coordinator Futurist Orientation Secured
T_E-15.0
t_e-66.0
t_e-89.0
t_e-15.0
t_e-10.0
Coordinator Learning Resources Secured
T_E-15.0
t_e-69.0
t_e-15.0
t_e-2.0
Administration Staff and Offices Operational
T_E-7.0
t_e-105.0
t_e-1

An Effective
by Lawrence
Stuart H. S
State Unive

BSTEP Evaluat
by Clessen
and Special


Evaluation Design Completed
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Materials Packages Review Completed
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te=1.0
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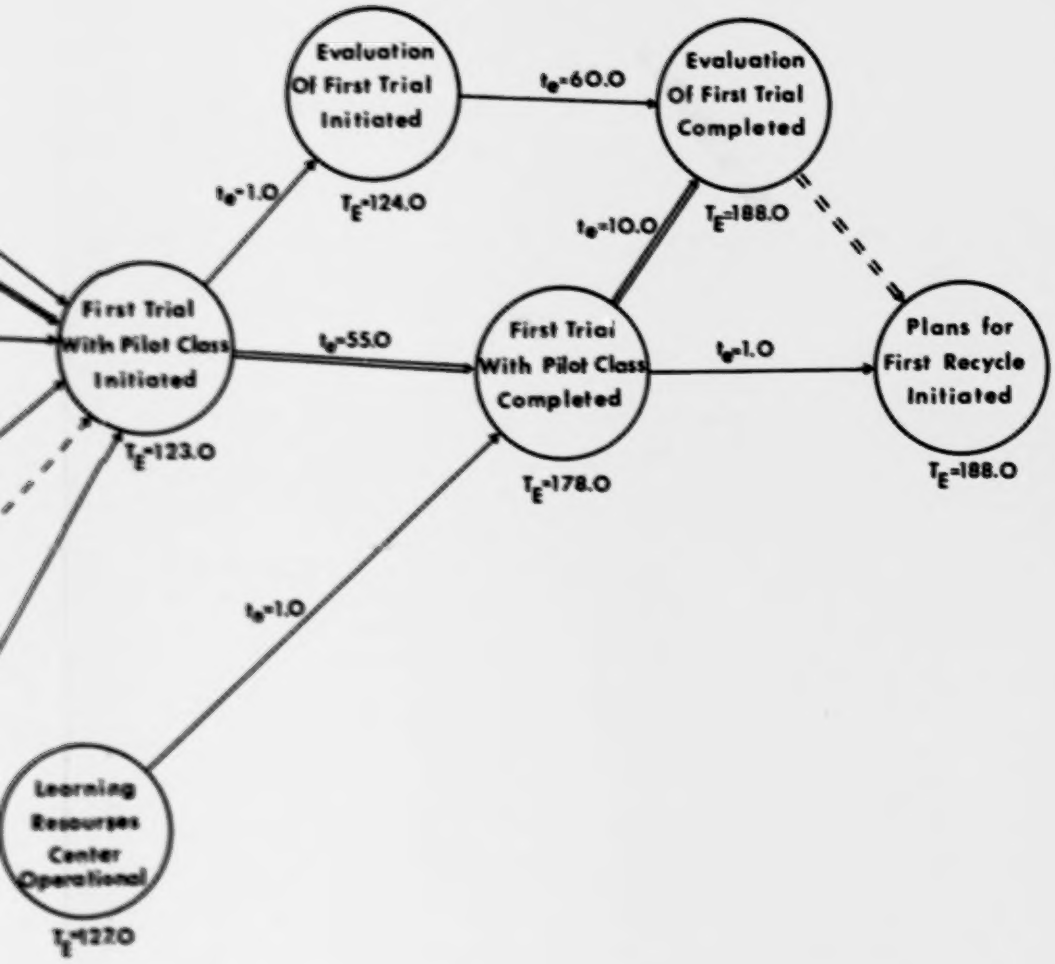
te=66.0
te=38.0
Orientation Conference For Faculty Completed
TE=55.0
te=15.0
Module Refinement Completed
TE=81.0
te=3.0
Materials Development Completed
TE=84.0
te=20.0
First Trial With Pilot Class Initiated
TE=123.0
te=1.0
Evaluation Of First Trial Initiated
TE=124.0
te=55.0
First Tr
With Pilo
Comple
te=10.0
Faculty Futurist Seminar Completed
TE=104.0
te=1.0
Learning Resources Center Operational
TE=122.0
te=112.0
te=105.0
Space and Equipment Operational
TE=112.0
te=1.0
te=100.0
University Program Approval Secured
TE=107.0

PERT

An Effective Communication System
by Lawrence Sarbaugh, associate professor, Communication Arts; and Stuart H. Surlin, Graduate Assistant, Communication Arts, Michigan State University

BSTEP Evaluative Design
by Clessen Martin et al. Martin is Research Professor of Elementary and Special Education, Michigan State University


Evaluation Of First Trial Initiated
T_E=124.0
t_e=60.0
Evaluation Of First Trial Completed
T_E=188.0
t_e=1.0
t_e=10.0
First Trial With Pilot Class Initiated
T_E=123.0
t_e=55.0
First Trial With Pilot Class Completed
T_E=178.0
t_e=1.0
Plans for First Recycle Initiated
T_E=188.0
t_e=1.0
Learning Resourses Center Operational
T_E=122.0

PERT Chart 1:7 Master Milestone Network - Implementation

SECTION II

PROGRAM DEVELOPMENT

Behavioral Science Teacher Education Program

MICHIGAN STATE UNIVERSITY

1969

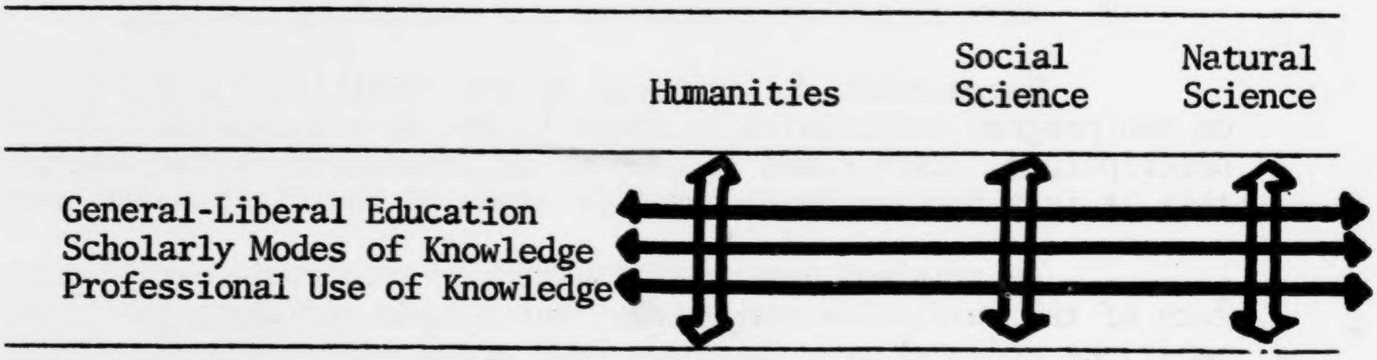
SECTION II PROGRAM DEVELOPMENT

Introduction

The basic purpose of the Behavioral Science Teacher Education Program is to develop an innovative, improved, individualized curriculum for elementary teachers. This section is devoted to the feasibility study of program development. When implemented, other aspects of BSTEP including its supporting management enterprise, faculty in-service education, and technological innovations are designed to contribute to more efficient and effective new programs.

The design of BSTEP is based on the assumption that the behavioral sciences can contribute important concepts and modes of inquiry to teachers' understanding, and that the clinical behavioral style provides a generalized model for employing these concepts in classrooms. It further assumes the necessity of early and continuous client-contact by prospective teachers in the Clinic-School Network. A fourth assumption is that the program for prospective elementary teachers cannot be limited to planned professional experiences. With these basic assumptions in mind, five areas of curriculum have been designed and coordinated to develop a broad base for professional competence: Clinical Experiences, General-Liberal Education, Scholarly Modes of Knowledge, Professional Use of Knowledge, and Human Learning.

Curricular areas must be interfaced on at least two dimensions, illustrated by the horizonal and vertical arrows in the figure below.


Humanities
Social Science
Natural Science
General-Liberal Education
Scholarly Modes of Knowledge
Professional Use of Knowledge

Illustrative Program Interface

The various components within General-Liberal Education must be articulated for efficient instruction; but Social Science, for example, must also be interfaced across the three instructional areas. The importance of this conceptualization of the program cannot be stressed too strongly. A further example can illustrate the interface among components. Often innercity teachers have considerable difficulty understanding the behavioral patterns of their children. Since each person grows up in a narrow cultural channel, an understanding of other cultures and value systems can broaden students' concept of the range of value orientations. Humanities III explores three non-Western cultures. These experiences, coupled with study in Human Learning and direct experiences in the Clinic-School Network, can aid the student to better understand diverse cultures within America. But even these cross-component experiences must be interfaced so that the related modules can effectively provide realistic and multifaceted concepts.

Extensive descriptions of curriculum areas, and their components and modules, were included in the Phase I report. That report was meant as a first draft. The study has since grown in focus and specificity. During the implementation period, the programs will be further refined to move toward:

1. Better selection of experiences which promote behavioral science concepts
2. Performance-based curriculum
3. Individualized instruction
4. Better use of technology
5. More specificity in stating objectives
6. Alternate learning routes to meet performance standards
7. Additional program alternatives for individual needs
8. More effective procedures for evaluating learning

Recommendations included in the feasibility study are based on the program articulated in Phase I, and do not duplicate those descriptions. Each Phase II chapter is predicated on the assumption that it is a further development or study of the first model described.

An original intent of the feasibility study was to analyze each of the curriculum components, but a reduced budget precluded this ambitious undertaking. Instead, four areas were explored: Clinical Experiences, Humanities as a paradigm of General-Liberal Education, Natural Science as representative of Scholarly Modes of Knowledge, and Social Studies as exemplary of Professional Use of Knowledge.

Following Chapter 2 on program development design, each of these components is presented in Chapters 3 and 4. Date gleaned are extrapolated to other curriculum areas for budgetary purposes.

The Instructional Resources Support System is a service agency to promote effective use of educational technology in curriculum development. The parts of this system, and their relation to BSTEP and to other resources in the University and Clinic-School Network are described in the last chapter of this section.

Chapter 2

PROGRAM DEVELOPMENT DESIGN

Introduction

In October, 1967, the Bureau of Research, U.S. Office of Education issued a request for proposals. The product to be furnished was "Educational Specifications for a Comprehensive Teacher Education Program for Elementary Teachers." Clearly, the professionals applying their energies and expertise to the task would be engaged in educational development.

The problem as stated in the USOE Request For Proposal reads:

> Because of the key role that the teacher plays in facilitating learning, particularly with young children, he/she must have the most up-to-date theoretical and substantive knowledge and professional skills to perform successfully. To date, research and development activities have generated new knowledge, materials and methodology with great potential for improving the effectiveness and efficiency of the teaching-learning process. If funds are made available, institutions should be able at this time to completely restructure their teacher education programs to include the best of what is now known and available.

Based on the USOE statement of the problem, the task of identifying the curriculum-intended learnings was evident as was the research and development from which the curriculum was to be derived. The government RFP indicated the program should be replicable at other institutions with other personnel. Further, the RFP favored utilization of systems analysis in developing the desired specifications.

At Michigan State University, the first task undertaken was determination of the necessary and sufficient curriculum areas for a comprehensive elementary teacher education program. Theoretical literature and innovations in operation were perused and explored. Consideration was given to results of experiments with internships, team teaching, and recent developments in the social sciences, behavioral sciences, computer sciences, and natural sciences.

Subsequently, five curriculum areas were identified: General-Liberal Education, Human Learning, Scholarly Modes of Knowledge, Professional Use of Knowledge, and Clinical Experiences. Conceptually, study reflecting the behavioral scientists' interpretation of knowledge and related clinical experiences would produce a teacher who was a practicing behavioral scientist. The program was named the Behavioral Science Teacher Education Program (BSTEP). Graphically, BSTEP may be presented as:

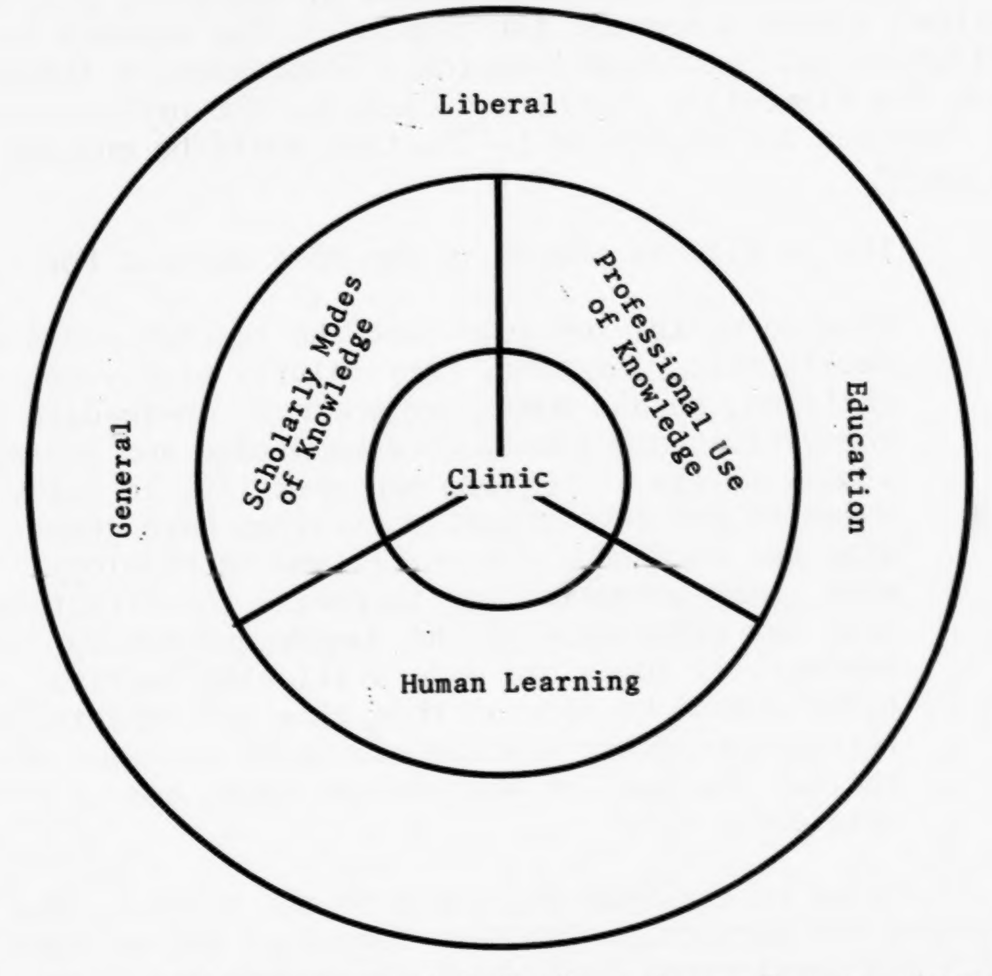


Figure 2:1 Conceptual Relations Among Program Areas

Presently, General-Liberal Education in BSTEP maintains the university-approved premise of a general-liberal education. However, instructional modes reflect behavioral scientist's interpretation of the humanities, social sciences and natural sciences. Clearly, General-Liberal Education circumscribes the total program, but is conceived as coexistent with, rather than prerequisite to, the acquisition of other knowledge and skills uniquely appropriate to the elementary teacher.

There are three realms of theoretical knowledge in which a teacher should be proficient and conversant: curriculum theory--content relevant to an elementary school curriculum; learning theory--characteristics of learning and learners; and instruction theory--means of bringing learner and content together. The BSTEP plan categorized Scholarly Modes of Knowledge as curriculum, Human Learning as learning, and Professional Use of Knowledge as instruction. To determine the necessity and sufficiency of specific program content, a detailed analysis of the curriculum areas was undertaken, with the result that a fifth BSTEP curriculum area was conceived. The area was called Clinical Experiences and was designed for synthesizing and applying knowledge acquired in curriculum, learning and instruction to teaching elementary school pupils in a systematic, therefore, scientific manner.

The Scholarly Modes of Knowledge consist of various academic disciplines relevant to today's elementary school curriculum, and have little or no direct utility or relevance for university students who plan careers outside teaching. In Human Learning the focus is on growth and behavioral characteristics of learners at varying ages and stages of development; affect of various societal factors on learners; and goals and specific objectives in terms of man, society and education. The intent of Professional Use of Knowledge is developing student facility in utilizing the knowledge obtained in Scholarly Modes of Knowledge and Human Learning to make decisions regarding instruction in the major curriculum areas of the elementary school.

Although instruction is the major theme of Professional Use of Knowledge, not all instructional variables are considered in this area. Emphasis is placed on those variables in organizing content for instruction, selecting appropriate materials and planning modes of presentation. Some attention also is given to variation in instructional planning if different levels of objectives are desired.[1]

Clinical Experiences in BSTEP also consider instructional variables and evaluation of instruction. Variables emphasized in Clinical Experiences are primarily management of instruction, but range from observation to analytical study of teaching. A second goal of the clinical area is allocation of the BSTEP student's time with elementary school pupils on a regular basis from the beginning of the student's university experience, and through his entire teacher preparation. The major goal in the clinical area is acquisition by the student of a clinical behavior style of teaching.

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[1] Benjamin S. Bloom, Ed. Taxonomy of Educational Objectives: Cognitive Domain. (New York: David McKay, 1956).
David R. Krathwohl, et al, Taxonomy of Educational Objectives: Affective Domain (New York: David McKay, 1964).
Robert M. Gagné, The Conditions of Learning. (New York: Holt, Rinehart and Winston, 1965).

Program replication, as cited in the October, 1967 RFP, also was scrutinized by Michigan State University proposal designers. Replication as interpreted at MSU meant that the "intended-learnings" could be replicated at MSU with distinct sets of students instructed by distinct sets of professors and at other institutions under similar conditions.

The atom of the BSTEP instructional design is a module. A module includes a terminal behavior as an objective and prerequisite behaviors and activities leading to the terminal behavior. The word, module, is synonymous with instructional specification.

Intended-learnings of BSTEP are stated individually in terms of a desired post-instructional behavior, thus making BSTEP a performance-based and replicable teacher education program. To further insure intra- and inter-institution replicability, modules are entered in a computer-based Information Retrieval System which enhances the marketability of the product, BSTEP.

Systems analysis has been increasingly used by the nation's educational research and development centers and laboratories. To date, ten aspects of systems analysis have been used or aspired to:[2]

1. Definition of need to which efforts are to be addressed

2. Formulation of a set of objectives

3. Description of constraints under which the product is to operate

4. Search for feasible ways of achieving the objective under the identified constraints

5. Choice among alternatives

6. Design of a prototype

7. Rigorous evaluation of product components

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[2] Francis S. Chase, National Program of Educational Laboratories, (Washington, D.C. 1968) U.S. Department of Health Education and Welfare, Office of Education, Bureau of Research, Contract No. OEC-3-7-001536-1536

8. Redesigning and modification of product components
9. Extensive testing of the modified product
10. Continuing modification of the product

To escape the typical rise and fall of new educational products, systems analysis applied to development seems mandatory to insure innovation and avoid arrested development. A review of the BSTEP model, as detailed in the Final Report of Phase I, reveals that the product has not yet been tested in simulated or pilot conditions. Hence, a major task of the Phase II Program Development Task Force is selection of an appropriate product development design based on systems analysis.

Other Phase II tasks of the Program Development Task Force involve plans for making operational a performance-based program. These tasks are: creation of an instructional management system for a replicable program, a sequence of tests of BSTEP components, a development progression for the successive classes of BSTEP students, schemes for student-evaluation and record-keeping, and product evaluation from single modules to whole program review.

The Design

Background of Design

Perusal of efforts by research and development centers and laboratories invites the conclusion that a foolproof plan for educational development has not yet been invented. However, some guidelines have been established for development of educational products for the schools that seem applicable to "educational specifications for a comprehensive teacher education program."

Guidelines cited by the Southwest Regional Laboratory (SWRL) at Los Angeles are most promising. The SWRL group tends to favor six functions in educational-development and four major activities for program-implementation. The development functions are:

1. Instructional Design
2. Test of Prototype
3. Production
4. Quality Verification

5. Instructional Technology

6. Staff Training

The first four functions are sequential, although not strictly linear, whereas Instructional Technology and Staff Training are coordinate functions permeating all development phases.

In a discussion of Educational Development, Baker [3] elaborates on the topic and its functions:

> Educational development is user-oriented rather than knowledge oriented. It is conducted in pursuit of a finished product of maximum utility. The product is not ordinarily restricted to a fixed physical entity; each "product" is embedded in a technological and social context which determines in large part its usefulness. To be sure, research activities are an integral part of this function, but the emphasis is on "application." In the main, developers "feed on" the knowledge produced in the laboratories. However, there is a respectability about this kind of applied research which negates the equation made by one writer between the developer and the parasite.
>
> Development activities are unique, too, in that they necessitate a functional relationship between individuals and groups of individuals. Development is so specialized and at the same time so diffused that the work of one becomes the work of all ....Solution of problems and development of courses of action that involve closely interwoven heuristic and algorithmic threads necessitates operational interdependence between and among the researchers, inventors, developers, and installers.
>
> 1. Instructional design The purpose of this function is to translate available theory and empirical data into instructional specifications and to prepare prototype materials and methods. which reflect these specifications. This is the first stage in "closing the gap" between research

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[3] Robert L. Baker, "Research, Development and Dissemination Strategies in Improving Education," Planning and Effecting Needed Changes in Education, Edgar L. Morphet (ed.) (Denver, Colorado: Designing Education for the Future: An Eight State Project, 1967) pp. 106-115.

and practice. These activities concurrently draw upon and feed into a simultaneous program of research focusing upon curriculum content and instructional material.

2. Test-of-prototype The prototype product inevitably includes built-in assumptions about the real world, which may or may not hold. Before proceeding with further development, it is desirable to obtain an empirical check on these implicit assumptions. No assumption is made that if the product accomplishes its objectives under artificial or simulated conditions it will likewise do so under real-world conditions. However, there are typically many "bugs" to be worked out, and until these have been eliminated, there is little chance it will perform as desired under more complicated conditions.

3. Production This involves converting the prototype instruction into a form suitable for real-world testing....Research will have to be conducted on such things as the appropriate "cosmetics" of the product and how best to introduce motivational devices to make the product more attractive to (students and instructors) alike. This is not to be confused with the old saw, "ninety per cent of the sales is in the packaging."

4. Quality verification This involves the successive trial-revision cycles required to bring a product to an acceptable level of performance under complex real-world conditions. Quality verification activities typically involve a succession of corrective cycles to identify and eliminate defects until the product adequately satisfies current user needs.

This is not a demonstration function, although it may sometimes serve the role quite adequately....Although some...practitioners and researchers might view it as a demonstration, the quality verifiers are only interested in product performance and the development of effective user specifications.

5. Instructional technology The function of instructional technology is to apply the latest developments in modern technology to increase

> the efficiency of educational development and practice. Activities here relate to all the functions. Whether attempting to analyze [a set of modules for the purpose of determing sequence] or developing an information feedback system to increase the [instructors'] monitoring efficiency, instructional technology is involved.
>
> 6. Staff training An educational product cannot reasonably be considered apart from the professional staff who will be involved in using it, yet this has been the common professional practice. A number of questions are of research and development interest to staff training. For example, what form should instruction take if the objectives relate to specific professional behavior rather than general teacher education? Or, what instructional system is appropriate if one views the education of teachers as continuous rather than a dichotomy between preservice and in-service?

The activities of implementing a program as identified by Baker[4] are:

1. Dissemination
2. Installation
3. Evaluation
4. Program Review

These, Baker contends, involve the complex problems of interface between educational development and adoption. He further asserts that "implementation in an educational context is an inherent aspect of the end product which has been developed. Implementation concerns cannot be delayed until the end of a development phase, as is frequently the case. Rather, each product developed should, from its inception, be influenced by implementation requirements. These requirements are in large measure determined through the verification and research activities conducted during the development phase." The following are Baker's descriptions of the four implementation activities:

> 1. Dissemination The dissemination function stands between two sub-systems. Activities here include the

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[4] Ibid.

translation of the product specifications from design through quality verification, into the language and operations of the practitioner....Whether (personnel) ...are document producers or field specialists, their job is to develop comprehensible methods for "getting the word out." They also have the responsibility for helping potential users to determine what modifications they must make to accommodate the new product.

2. Installation It is one thing to "purchase" a complex machine; it is quite another thing to install it. As it sits on the floor, or as it is demonstrated by the disseminator, it looks so straight forward. But who would guess that meeting the installation specifications would be so complex? Activities related to this function will involve analysis of the peculiar characteristics of the user to determine what must be done to maximize the success of the new product. In addition to the product requirements, such considerations as how adoption of a new product will influence related already existing programs and what involvement (other agencies, units, and institutions) should have (is) important here.

3. Evaluation The activities related to this function involve the collection, organization, and analysis of data necessary to make a decision on the adoption of a product or the modifications required for a more effective performance of a product. The evaluation function differs from quality verification in that there is a greater emphasis placed on criteria not directly related to the product's objectives. In addition to measures of student performance, criteria involving such things as attitudes, cost benefits, logistics, and total curricular continuity would be of importance. Although the central focus remains on learner behavior, decisions on adoption require data related to many aspects of the instructional setting.

4. Program review This function is critical. Judgments are made and decisions are handed down with respect to adoption and revision. It is necessary that this function be supplied with sufficient and interpretable data. Although distinctly an administrative function, activities here should constitute respectable

input for the product development stages, especially as the evaluation data become amalgamated with the educational beliefs, attitudes and motivations of the decision maker.

Recommendations

Based on an analysis of BSTEP, the apparent intent of the Bureau of Research of USOE, and literature on program development, the Program Development Task Force recommends that the six development functions and four implementation activities as cited above be adopted as guidelines for Phase III development and implementation of the BSTEP model.

Adapting The Development Design

Using the BSTEP modules presented in the Final Report of Phase I and Phase II description of the five periods Pre-implementation and implementation Periods 1 through 4 as a paradigm the following recommendations and accompanying explanation are presented:

Instructional Design

> Activities in this function typically involve an interlocking series of rational formulations and empirical studies. The initial stage of instructional design is characterized by conceptualizing the most powerful variables in an area that can then be woven into a broad instructional strategy.[5]
>
> The conceptualizing activities are followed by definition activities which culminate in instructional specifications. During this stage what the learner must be able to

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[5] Richard E. Schutz, Developing the "D" in Educational R & D, (Inglewood, Calif.: Southwest Regional Laboratory for Educational Research and Development, 1968)

do after instruction is precisely explicated.[6]

Third in the instructional design steps is construction of materials, methods, and tests for prototype testing. These must be compatible with the set of instructional specifications each of which includes a behavioral objective with an accompanying instructional activity.

Recommendations

Elsewhere in this Report activities of the Instructional Design function may be referred to as "development" or "initial development." Descriptions of the activities, regardless of terminology, reveal a progression from conceptualizing an objective, to defining the conditions under which the objective is to be attained, and satisfying the criteria for prototype testing.

Recommendations are:

1. That the modules submitted for Phase I of the BSTEP Model be accepted as instructional specifications according to the conceptual and definitive stages cited above

2. That the Pre-implementation Period through Period two of Phase II be used to complete the activities of the instructional design function (this would correspond with the prototype-testing schedule

3. That, in general, the original authors of a BSTEP component, a peer and a teaching assistant where practical fulfill the instructional design function

4. That the component modules meeting the following criteria are ready for prototype testing:

    a. each module objective satisfies the criteria of a behavioral objective

    b. each module activity satisfies the appropriate-practice criteria

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[6] James W. Popham, Appropriate Practice in Instructional Products (Inglewood, Calif.: Southwest Regional Laboratory for Educational Research and Development, 1968)

c. each component has a criterion-referenced test with alternate forms.

Prototype Testing

Although the prototype instruction seeks to embody available research and theory, it inevitably includes built-in assumptions about the real world, which may or may not hold. During this period, prototype items are administered to students in the potential target population. The product developer may be obliged to modify certain elements of his instructional specification after the prototype test.

Recommendations

Prototype testing in BSTEP is also referred to as the first "try out" or "testing of the modules" with students. Some of the modules will be prototype tested with students who will be members of the first or second BSTEP "graduating class." Other modules will be first tested with non-BSTEP students who are pre-service elementary teachers.

Recommendations are:

1. That the modules of BSTEP be prototype tested according to the following schedule:

   a. Set A with BSTEP students during Period One

   b. Set B with BSTEP students and Sets C and D with non-BSTEP students during Period Two

SET A

Humanities I
Social Science I
Natural Science I
Human Learning I
Mathematics I (SMK)*
Reading I
Mathematics I (PUK)*
Clinic I

SET B

Humanities II
Social Science II
Natural Science II
Human Learning II
Social Science (SMK)
Communication
Linguistics
Fine Arts I
Social Studies
Language Arts
Clinic II

SET C

Humanities III
Social Science III
Natural Science III
Modes of Inquiry Sem.
Science (SMK)
Children's Literature
Mathematics II (SMK)
Fine Arts II
Reading II
Mathematics II (SMK)
Fine Arts II
Reading II
Mathematics II (PUK)
Science (PUK)
Clinic III

SET D

Human Learning III
Clinic IV

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* SMK: Scholarly Modes of Knowledge
PUK: Professional Use of Knowledge

2. That the necessity and sufficiency of modules in a given component be considered during prototype testing by an evaluation team which may include:

a. the instructor

b. a peer of the instructor

c. a teaching assistant

d. an intern consultant

e. a practicing teacher

f. a student

g. a representative of evaluation team

3. That in general the original author of a given component may be the principal instructor during the prototype test of the component's modules.

Production

> Central to the idea of systematic development of instructional materials is the tenet that instructional materials, once prepared, can be improved on an empirical basis. This approach, sometimes referred to as a "self-correcting mechanism," is exemplified during this stage of the product development cycle when the results of the prototype trials are used to improve the instructional product. It is very likely that certain instructional specifications will be recycled so that once more the product is tested and, on the basis of such second and third trials, revisions are made. During this recycling the materials are used with more and more students so that the conditions are ever approaching those of real life.[7]

Recommendations

Production in BSTEP refers to the redevelopment activities following Prototype Testing, the second try-out and redevelopment activities for the modules in Sets A, B, C, and D, and the third trial and redevelopment activities for the modules in Set A (sets cited in prototype testing scheme).

Recommendations are:

1. That at the end of Period Three each BSTEP module will possess an objective and three distinct activities in which a student may engage enroute to objective attainment.

The general rationale for the development of alternate activities for each module is an attempt to make the BSTEP curriculum more compatible with research that indicates learners have different learning styles. The alternate activities leading to the same objective therefore provide opportunity for more individualized instruction.

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[7] W. James Popham, Educational Criterion Measures (Inglewood, Calif., Southwest Regional Laboratory for Educational Research and Development, 1968)

Specifically, the rationale for the development of alternate activities rests on the need for individualizing the program and providing a student with alternate means of attaining an objective for a given module in the event the first activity fails to produce the desired terminal performance.

> 2. That each try-out of a component during production be scrutinized by an evaluation team similar to the prototype-test evaluation team.
>
> 3. That a component consisting of modules, each containing a behavioral objective and three alternate activities leading to objective attainment, and alternate forms of an accompanying criterion-referenced test be accepted as the standard for BSTEP.

This does not mean that modules cannot be added to or deleted from a component. It merely indicates an optimal standard for operation. With a single period remaining in the proposed PhaseIII, having modules in the standard operational form at the end of Period Three permits application of the quality verification techniques to the product with only BSTEP students during Period Four.

Quality Verification

Although not a demonstration function, quality verification places the product in a variety of user situations in order to generate the unanticipated contingencies which inevitably arise and subsequently identify performance defects. It is the quality verification function that provides a product with the necessary built-in recycling and self-correction process.

> Quality-verification is also a promising area for stimulating new types of research. Educators have typically been concerned with evaluation of a restricted area of performance: the cognitive behavior of the learner. Untapped potential exists in measuring the instructional transaction per se, and the affective behavior of learners, instructors and related groups.[8]
>
> Finally, the quality-verification function includes an analysis of the developmental process employed in preparing the product. Someone needs to undertake a systematic operations analysis of every completely developed product. Further, this analysis

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[8] Schutz, Developing the "D" in Educational R & D, op cit.

should be recorded and stored in a central repository.[9]

Recommendations

In BSTEP, quality verification is primarily focused on development of the product. Evaluation of students is a factor considered by the quality verifers but only as it relates to the product. Cost-benefit is not a direct concern of quality-verification.

Recommendations are:

1. That the following be used in the completion of the instructional-design stage of program development:

    a. That each module objective satisfy the criteria:[10]

        1) Subject - the learner
        2) Verb - behavior or product of behavior
        3) Given conditions - situation in which the behavior occurs
        4) Standards - quality, quantity, or time

    b. That each module activity accompanying an objective satisfy these criteria:[11]

        1) Equivalent practice or
        2) Analogous practice

    c. That each component have alternate forms of a criterion-referenced test:

        1) One form for a pre-test
        2) The second form for a post-test

2. That a component satisfying the conditions of the preceding recommendation may then and only then be prototype tested.

3. That all newly created modules satisfy the conditions specified in a. and b. in recommendation 1.

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[9] Popham, Educational Criterion Measures

[10] Richard E. Schutz, Robert L. Baker, and Vernon S. Gerlach, Stating Educational Outcomes (Inglewood, Calif.: Southwest Regional Laboratory for Educational Research and Development, 1968)

[11] Popham, Educational Criterion Measures

4. That all modules be developed to the standard level at conclusion of the production stage of program development. Each module at the end of the Period Three would then consist of:

   a. A behavioral objective

   b. Three distinct alternate activities from which the student selects one as his route to the objective attainment

5. That a research team be formed to design and research hypotheses in curriculum areas during the program development stages of:

   a. Prototype-testing

   b. Production

   c. Quality-verification

   d. Longitudinal studies

Some suggested approaches are discussed in a Position Paper by Dr. Eva L. Baker, published as an addendum to this report.

6. That an operational analysis team be created to analyze and record the process of program development in BSTEP

Schematically, the major recommendations for program development are hereby presented. The specific cyclic delineation of these styles for particular areas of the program are described in Chapter 2 and 3.

Period	Program Development Function
Pre-Implementation	Instructional Design-Module Set A
Implementation 1	Instructional Design-Module Set B Prototype Test - Module Set A
Implementation 2	Instructional Design - Module Sets C & D Prototype Test - Module Set B Production - Module Set A
Implementation 3	Production - Module Sets A - D
Implementation 4	Quality - Verification - Module Sets A - D

Figure 2:2 Program Development Function

A concluding observation relative to the recommendations of the more sequential functions of program development is the opportunity to test one of the original hypotheses of BSTEP, namely, that it is a self-renewing program. Specifically, the modules in the components of Set A are to be tried and redeveloped four times. If in this fourth trial the number and content of the modules are modified, then it will tend to indicate the BSTEP curriculum is, indeed, a self-renewing one.

Instructional Technology

Current instructional technology activities center around the development of a computerized management system to handle a broad class of educational functions. These might be described in terms of their objectives or potential product.

Computer Managed Instruction: The system can be used to provide instructors with monitoring and analytic services needed to manage individual instruction of all students simultaneously.

Administrative Planning: The management system includes the capability of exploring and preparing a wide variety of reports and prognoses for researchers as well as administrators. Other functions of a computerized management system are Computer-Assisted Instructional Development and Computerized Instruction.

Recommendations

Technological materials and ideas are utilized in several dimensions of BSTEP. See the chapters on Information Retrieval and the Instructional Resources Support System for detailed discussions. In this segment of the recommendations for program development the consideration is directed toward the utilization of a computer-managed system for instruction and the related administrative organization for the program operation.

Recommendations are:

1. That a computer-managed system of instruction be developed for BSTEP based on the second proposal under evaluation in a latter part of this chapter.

2. That the system be adapted to handle each of three types of student activity identified in the analysis of the BSTEP modules. The three types of student activities are: passive, semi-active and active. These are further discussed, and modules

analyzed in a supporting position paper by Frederick A. Staley.

3. That the system be programmed to identify the times and sites in which a student may engage in the activity leading to a given module objective. This is particularly significant for activities in the schools or with certain technological equipment such as the electronic carrels.

4. That the following schematic design serve as the organizational plan for the program development subsystem during Phase III See the chapter in this report devoted to operation and administration for an overall proposed scheme of BSTEP at Michigan State University.

Functions and Structure of Curriculum-Area Teams

Each team will be composed of a coordinator, a research assistant and an instructional team (see the chapters on Curriculum Components and Clinical Experiences for components in the respective curriculum areas). The permeating function of each team is the development of its product to meet the accepted standard outlined in the program development design of BSTEP.

The coordinator of each curriculum area will supervise the instructional design, prototype testing, production and quality verification of the component modules, including the accompanying research, and adapting the product to a computer-managed instructional system. Recruitment and approval of personnel for the instructional teams will be a function of the curriculum-area coordinator.

Each research assistant with approval of his coordinator and the research coordinator would design, conduct and interpret research according to quality verification specifications. Instructional teams would fulfill instructional design specifications, prototype test, and redevelop and re-try (production) the modules.

In addition to the above functions the clinical experiences team would have the responsibility of supervising the module activities from all curriculum areas that are conducted in the elementary schools or in off-campus locations. This procedure implies the necessity of each student spending a minimum period of time (perhaps weekly) on a regular basis in the schools. Specifically, the implication is for a systematically organized mode of assigning students to schools for the purpose of performing a module activity leading to attainment of a module objective.

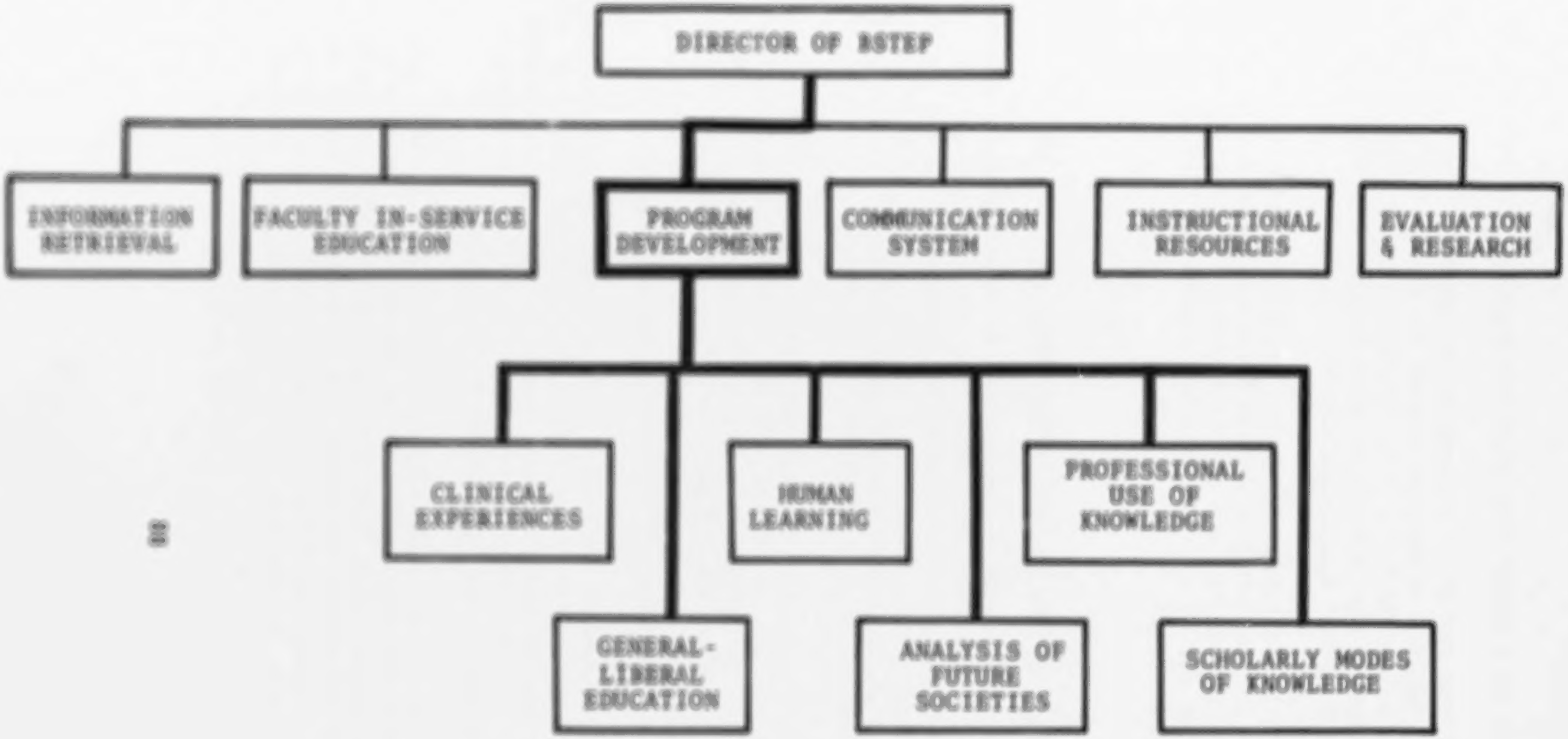
DIRECTOR OF RSTEP
INFORMATION RETRIEVAL
FACULTY IN-SERVICE EDUCATION
PROGRAM DEVELOPMENT
COMMUNICATION SYSTEM
INSTRUCTIONAL RESOURCES
EVALUATION & RESEARCH
CLINICAL EXPERIENCES
GENERAL-LIBERAL EDUCATION
HUMAN LEARNING
ANALYSIS OF FUTURE SOCIETIES
PROFESSIONAL USE OF KNOWLEDGE
SCHOLARLY MODES OF KNOWLEDGE

Figure 2:3 Program Development Coordination

Role of Program Development Coordinator

He will:

1. With the Director of BSTEP, select the coordinators for
    - a. Futurist Orientation
    - b. General-Liberal Education
    - c. Scholarly Modes of Knowledge
    - d. Human Learning
    - e. Professional Use of Knowledge
    - f. Clinical Experiences
2. Coordinate the efforts of the curriculum-area teams
3. Serve as the primary BSTEP officer responsible for fulfilling the Program Development Design
4. Serve as a liaison person between the other subsystems and the coordinators of the program development subsystems

Staff Training

While the same program elements described above are relevant to the development of the staff training and methods, it has been found advisable to explicitly recognize staff training as an important responsibility. In addition to training and methods, exciting research possibilities exist. (See Chapter 7 on Faculty Orientation and In-Service Education for a detailed discussion of staff training in BSTEP).

Adapting The Implementation Design

As per the October, 1967 RFP, BSTEP has been considered as a product to be developed at MSU for other institutions. However, during Phase II the problem of adapting BSTEP as the teacher education program at MSU or some other institution will become a reality.

Dissemination

This activity will be the responsibility of all personnel involved in development of BSTEP. A significant portion will be left to the communications officer as delineated in the chapter on administration.

Recommendations

1. That a quarterly publication containing articles and reports emanating from the development activities of BSTEP be established early in the Implementation Phase. The quarterly might be called the BSTEP Review.

2. That establishment of this journal be handled similarly to that of the Journal for Research and Development in Education. Publication was supported institutionally for over two years, then subscriptions were accepted.

Installation

With more than 4,000 pre-school and elementary school majors at Michigan State University, it is neither practical nor possible to install BSTEP until the program design functions have been completed and very carefully evaluated. Developing the necessary materials in the quantity required for such a large student body would be costly in the early prototype testing stages when modules are in flux. It should be pointed out that some components in BSTEP are presently being taught as instructional pilot programs. During the Spring Term and Summer Term of 1970, we are also planning to try out the BSTEP curriculum for 600 undergraduate students in Children's Literature. In These early trials we expect that some activities and procedures will be effective, some will need revision, and others may have to be discarded. As parts of this program are proved successful, we plan to extend them as broadly as resources will allow and as rapidly as practical. We will widely put into operation those components which prove workable and successful; we certainly do not plan to install components for the large student body we serve until they are tried out and until they prove to meet established objectives.

Evaluation

This aspect is extensively discussed in Chapter 1, on Evaluation and Benefit/Cost Analysis, selected aspects are considered in each of the other chapters vis á vis their particular orientation; the process and organization of evaluative services was explicated in Section IX of the first BSTEP report. Indeed, evaluation and the resulting program modification is the *sine qua non* of the BSTEP program developmental design.

Value of Behavioral Objective

Basing BSTEP on precisely-written, performance-based behavioral objectives clearly has the support of leading thinkers in education today.[12] Ojemann[13] emphasizes the importance of overt performance as the base for evaluation, saying, "The only way one can learn whether a child has mastered a skill, a bit of knowledge, or a feeling pattern is by observing his behavior in specified situations." The need for specificity has been cited by Bloom, who says, "For the educational technologists and evaluators, the clearer the specifications are in terms of both content and behaviors, the better,"[14]

The use of such behavioral objectives has a number of strengths. Most important, behavioral objectives communicate clearly. Criterion measures let the student know at once the behavior he is expected to exhibit in the course of study and specify for the instructor the precise behavior he must develop in his students. Once instruction begins, the criterion measures become even more useful in providing feedback to the student concerning his progress in the component and in providing diagnostic data for the instructor's use in providing special help for those who need it.

Second, the use of behavioral objectives enhances the evaluation of the program itself. Once the intended learnings are identified, collection of objective data about the system becomes easy. Decisions concerning the effectiveness of instructional techniques and materials are made not on the basis of subjective judgments, but by comparing results against the specific criterion outcomes specified in the objectives. Hence, program modification and evaluation is enhanced.

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[12] Robert Mager, *Preparing Educational Objectives* (San Francisco, Calif.: Fearon Publishers, 1962
R. C. Wittrock, "The Evaluation of Instruction: Cause and Effect Relations in Naturalistic Data," *UCLA Evaluation Comment* (Los Angeles, Calif.: Center for the Study of Evaluation, UCLA, May, 1969

[13] Ralph Ojemann, "Should Educational Objectives be stated in Behavioral Terms?" *Elementary School Journal*, February, 1968, pp.223-231.

[14] Benjamin S. Bloom, "Some Theoretical Issues Relating to Educational Evolution." *Educational Evaluation: New Roles, New Means*, National Society for the Study of Education Yearbook, 1969, P. 28.

Third, explicitly stated behavioral objectives guard against alteration in the program by various pressures and whims. As Bloom stated:

> If the purposes and specifications for education are not explicit, then it is possible for them to be altered by social pressures, by fads and fashions, and by new schemes and devices which may come and go with momentary shifts on the educational scene. Implicit purposes are difficult to defend, and the seeming vacuum in purpose invites attack and substitution of explicit purposes by a constant stream of pressure and pressure groups.[15]

While continual evaluation and modification in the program is certainly desirable, such modifications must be based on specific data rather than on whim. Behavioral objectives, by their specificity, insure that such will be the case.

Fourth, the use of performance criteria and behavioral objectives makes it possible to determine clearly whether or not the student meets the minimum level of performance deemed necessary for beginning teachers. As Tracey et al have written.

> The student must meet all objectives. Superior performance in one cannot compensate for unsatisfactory performance in another area. When the student has successfully completed a course he reaches a performance level called "minimum qualifying," and there are no grades or other ratings given.[16]

Finally, by examining behavioral objectives, persons outside the university community can tell exactly what it is that the graduated student can do. Currently, student competency is defined by a letter grade or number grade received in a course. Such measurement is haphazard, since the grade provides no insights concerning what the student knows, or what he can do, or how well he can perform. As Yelon stated, "These symbols (grades) are like projective test items; you may read in whatever meaning you wish."[17] Because grades do not reflect in detail the performance symbolized and because no two people could look at a student's grade and precisely agree concerning how well he had done, grades fail to communicate to persons outside the university. Behavioral objectives, on the other hand, aid communication because they cite in detail the performance to be expected and the level of competence of a graduate from such a program.

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[15] Bloom, P. 29

[16] William Tracey, Edward Flynn and C. L. John Legere, "Systems Thinking for Vocational Education," Educate, November 1968, pp. 18-24.

[17] Stephen Yelon, "An Alternative to Letter Grades," Paper read at the American Personnel and Guidance Association Convention, April 8, 1968.

Purpose of Collecting Evaluative Data

While the decision to use behavioral objectives is the foundation of BSTEP's strength, a determination must be made concerning the evaluative data to be collected for each student as he proceeds through the 2,700 or more modules in the program. Ideally, the data to be collected should serve three functions. They should provide feedback to the student regarding his performance and his need for further instruction; they should provide information to program developers upon which to base decisions regarding program revision and modification; and they should provide restricted information for prospective employers regarding the professional behavior of the student to be hired.

As Bloom[18] pointed out, however, evaluation is a two-edged sword. At its best, evaluation can achieve the functions of enhancing student learning and personality development, strengthening the program through careful revision, and clarifying for prospective employers what they can expect of those they hire. At its worst, evaluation destroys student learning and personality development when it emphasizes the goodness or badness of student performance, causing the student to be more concerned with the fairness of the decision than with the performance itself; it inhibits program modification when vague goals leave it unclear concerning what is to be accomplished; and it impedes school-employee relationships when employers must make hiring decisions on the basis of unclear and unreliable data.

To achieve the desirable aspects of evaluation, the evaluative data must communicate. They must communicate between teacher and student to specify what the student should be able to do; they must communicate between teacher and teacher regarding specific results sought from the program; and they must communicate between university and employer specifying prospective employee capabilities at the completion of the program.

Present grading systems, consisting of letters and numbers intended to sumbolize student performance, fail to meet the criteria of enhancing communication between teacher and student, between teacher and teacher, and between university and employer. As Wittrock[19] pointed out, it seems that the main purpose of current grading procedures is to tell how students perform relative to other students. Such systems do not tell how students' behavior has been changed and completely overlooks the possibility that good teaching could result in all or many of the students achieving all the objectives. In other words, someone currently has to fail to satisfy the criteria of a "good curve." Hence, the grading system which emphasizes finding the differences among students does little to provide individual feedback to the student concerning how his performance has changed in terms of declared objectives and provides no usable data for modification and improvement of the course. Similarly, such grading systems fail to communicate with employers, as demonstrated repeatedly by empirical data showing a lack of relationship between college grades and job performance.[20]

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[18] Bloom, "Theoretical Issues"

Recognizing weaknesses inherent in current grading systems, this proposal has abandoned all symbol systems as a student data source and has, instead, attempted to develop a method of data collection which will enhance the communication between teacher and student, between teacher and teacher, and between university and employer. Description of this follows.

An Evaluative Data Collection System for Students of BSTEP

A key feature of BSTEP is its use of behavioral objectives emphasizing performance criteria. It seems only logical and natural, especially in light of the failure of more traditional grading systems, to use the performance criteria already built into the BSTEP modules as the basis for the data to be collected on students. Tracey et al have stated the case for such a course with exceptional clarity:

> If the behavioral objectives have been established in a precise way, it is quite simple to see whether or not a student has successfully completed a course. He is either "go or no-go." Either he can demonstrate the required behavior or he can't. Such relative standings as rank in class, standard percentile scores, or letter grades are both unnecessary and ineffective. Such scoring measures an individual's

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[19] Wittrock, "Evaluation of Instruction"

[20] Dean Whitla, "Research in College Admissions," NSSE Yearbook, 1969 pp. 81-101.
Ralph Berdie, "The Uses of Evaluation in Guidance," NSSE Yearbook, 1969 pp. 51-80.

> performance against that of another. Passing scores are simply arbitrary. Neither scoring bears much relationship to later occupational performance.[21]

Consequently, it is proposed that the data collected on BSTEP students focus on performance in terms of each behavioral objective stated in each component. The structure for evaluation would follow the graphic description seen in Figure 2:4 on the following page.[22] Prior to each component, students would take a pretest to "index" Their current behavior in terms of each objective.[23] If all the objectives are achieved on the pretest, the student goes on to a new component. If he cannot perform one or more objectives as specified, he works on these in a manner determined by the instructor. At the conclusion of the instruction for each modular objective, the student completes a "Curriculum Embedded Test (CET) (Lindvall and Cox), which is a measure of the student's performance on one particular objective in the sequence. Depending upon his performance on the CET, the decision is made to advance the student to the next modular objective or to assign additional instructional experiences for the same modular objective. After passing the last CET for the component, the student takes a post-test. The post-test is an alternative form of the pre-test, and checks that the student's behavior has changed during the instruction, is a reassessment of his performance on the component as a whole, and acts as a diagnostic tool to decide whether the student should progress to another component or rotate through alternate modular experiences designed to assist the student reach the criterion behavior.

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[21] Tracey et al,"Systems"

[22] Figure adapted from C.M. Lindvall and R.C. Cox, "Evaluation of Individualized Programs," NSSE Yearbook, 1969, p. 179.

[23] Wittrock, "Evaluation of Instruction."

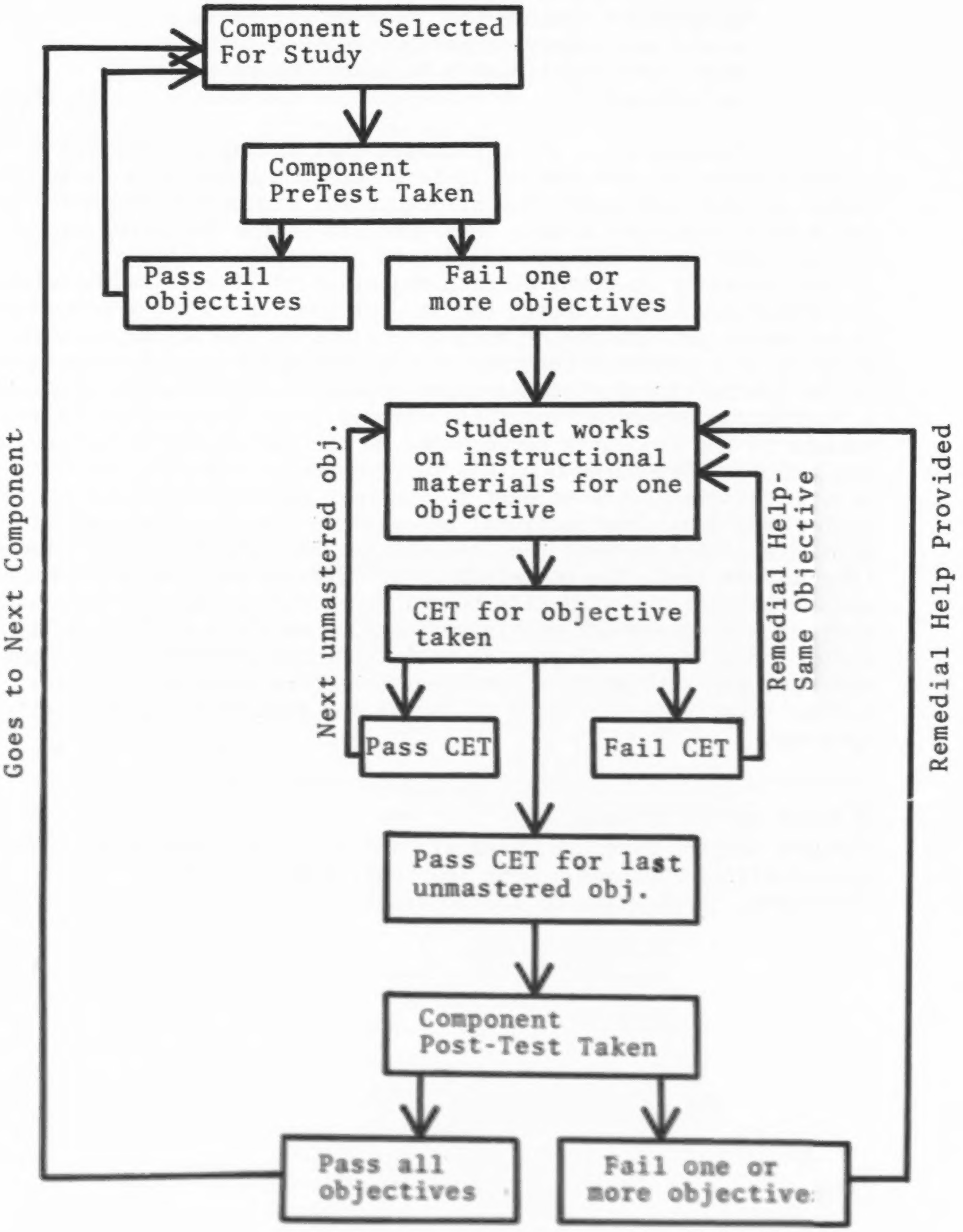
Component Selected For Study
Component PreTest Taken
Pass all objectives
Fail one or more objectives
Student works on instructional materials for one objective
CET for objective taken
Pass CET
Fail CET
Pass CET for last unmastered obj.
Component Post-Test Taken
Pass all objectives
Fail one or more objectives
Goes to Next Component
Next unmastered obj.
Remedial Help-Same Objective
Remedial Help Provided

Figure 2:4 Flow-chart of steps in the cycle for evaluating BTEP students

This scheme is designed to be used in either an instructor-based system or in a computer-based system, depending upon the resources of the implementing institution.

Instructor-based system. In an implementing institution where sophisticated computer systems are not readily available, instructors of components would cooperatively devise goal cards as a substitute for current grade books. Each student enrolled in the component would have a goal card, upon which is listed the behavioral objectives, the student's scores on the pre-test and post-test, and the instructor's open-ended comments concerning unusual aspects of the student's performance. As the student progresses through the modules, the instructor simply records the student's pre-test performance, his completion of the CET for each behavioral objective, his performance on the post-test, and relevant open-ended comments. Students also would receive goal cards on entry to components and would record their own progress as they worked.

Such a system has several advantages. First, it communicates, and therefore meets the most crucial criterion of an evaluation system. Students will know exactly how they are to perform and will receive feedback to guide them in studying since they would be checking off their own performance as they progressed. Faculty members teaching the same set of modules would have specific objectives to use for evaluating and modifying modules or instructional procedures. Prospective employers interested in hiring a student could obtain restricted professional data from the student's placement folder at the end of the component to learn what specific tasks the student can competently perform. Thus, the purposes for collective evaluative data -- the enhancement of communication between teacher and student, between teacher and teacher, and between university and employer -- are achieved.

The second advantage of the instructor-based system is that it virtually eliminates the stigma of "goodness" or "badness" normally associated with traditional grading, and emphasizes performance of specific tasks in terms of stated criterion measures. Hence, the evaluation system is positive in its effect, serving as diagnostic feedback for the cooperative use of student and teacher in planning instruction and eliminating the need to compare one student with another. Elimination of conventional grades also would improve student attitudes and lessen the "student trauma" so common under traditional evaluative systems.[24]

A third advantage of this system is the opportunity for open-ended comments by the instructor, which takes into consideration the fact that students may learn more than has been specified in the objectives. For instance, teachers might use such a space to note

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[24] Recommendations regarding university grading practices are made in Chapter 8 on Operation and Administration.

Sample Goal Card

PROFESSIONAL USE OF KNOWLEDGE, READING

Unit 4 Reading Rate

Student's Name Jack Sprat Student Number 000001

Pretest

Date Taken: 9/25/72

Performance Objective	1	2	3	4	5	6	7	8	9	10	11	12
	ok	–	ok	-	–	–	–	–	–	–	–	–

Curriculum Embedded Tests

Objectives	Passed on Pretest	Date first taken	Re-Cycled for Remedial	Date Passed
1. Writes a definition of reading rate which incorporates the concept of flexibility	ok			
2. Re-writes his definition of reading rate, incorporating the concept of rate of comprehension		9/26/72		9/28/72
3. Lists four rates and the appropriate use of each	ok			
4. Given the various developmental reading stages, he lists the typical kinds of rate instruction commonly provided at these levels		9/30/72		9/30/72
5. Lists the types of rate instruction which accompanies functional and recreational reading		10/3/72		10/3/72
6. Given simulated graphic data of a child's eye movements, he describes the child's eye movements using the correct terminology		10/6/72		10/6/72
7. Completes a study guide relating to his examination of instructional materials in reading rate		10/10/72		10/10/72
8. Given simulated material on a child's accuracy-rate ratio, he recommends appropriate instruction		10/13/72	10/16/72	10/20/72

Sample Goal Card, Cont'd

Objectives	Passed on Pretest	Date first taken	Re-Cycled for Remedial	Date Passed
9. Given simulated data on a child's eye movement pattern and word recognition competency, he recommends appropriate instruction		10/23/72		10/23/72
10. Lists five instructional techniques for developing rate of comprehension		10/26/72		10/26/72
11. List five ways in which children can be taught to vary reading rate according to purpose		10/30/72	10/31/72	11/4/72
12. Diagnoses the rate skills of one pupil, and teaches rate to the child on the basis of the diagnosis		11/2/72		11/2/72

Post-Test

Date Taken:

Performance Objective	1	2	3	4	5	6	7	8	9	10	11	12
	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok

Instructor's Open-Ended Comments

Jack continues to show unusual ability in reading instruction. Recommend he be urged to pursue reading specialty.

Instructor's Signature____________________

Figure 2:5 Sample Goal Card for use of BSTEP Students

unusual student insights during instruction, evidence of an unusual depth of feeling on the student's part for what he has learned, or an unusual personality trait which might qualify him for a special role in graduate school or in a specialized professional career. Hence, the system meets the criticism of some educators concerning the limitations of stating behavioral objectives so precisely as to eliminate the possibility for accommodating unforeseen extra learning.[25]

A final advantage of the instructor-based data collection system is its ease of operation in terms of teacher time and the needs of various agencies in the university. The maintenance of a goal card will consume no more time than is currently used in marking a grade book. For the university, the goal card is basic information which can be kept by the placement office to aid prospective employers, by the evaluation team in assessing module effectiveness, and by the director of BSTEP for identification of potential graduate students.

Computer-based systems. Implementing institutions having access to computer systems can achieve many of the same advantages through the use of computers. Typical data which would be collected are:

1. Pre-test scores with sub-scores for each objective. For example, for each student taking the pre-test, the total pre-test score and the scores on the various subtests will be stored in the computer under that student's name. Inquiries to the system may then produce scores of any student or group of students for the pre-test or any prescribed set of questions from the pre-test.

2. Post-test scores with sub-scores for each objective. The example here is the same as in 1 above, but post-test scores and sub-scores are here reported.

3. Progress of student through assigned modules. Upon completion of the pre-test, and the individualized module assignment, a set of cards is produced by the computer which indicates student name and module to be completed, one card for each module. As the student completes a module, the assignment card is returned and entered into the system. This could provide a continual up-dating of the progress of a student and a record of activities for each student between testing periods.

4. Continual up-dating of records. As the student completes a module, either by "testing-out" on the pre-test or by reaching the criterion on the post-test, his record is up-dated to immediately reflect progress through the system. Again inquiry of the system will provide an up-to-date report of student status.

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[25] Thomas Green, "Teaching, Acting, and Behaving," Harvard Educational Review, 34, Fall 1964, pp. 507-524.
Ojemann, "Educational Objectives".

5. Provision may be made to input from other sources data concerning the learner characteristics of each student. Since other important information concerning the student will be available, provision is made to also store such information under the student's name. For example, through testing procedures designed to identify individual differences with respect to learning, data become available which are useful for module assignment and evaluation. These data are then entered and made available in the system. This procedure was discussed in Sections IX and X of the Phase I report and in Chapters 10 and 11 of the present report.

The requirements for implementing such a computer-based system are listed as follows:

Personnel

1. Curricular - (already part of BSTEP)
2. Computer
    a. Consultant to work with BSTEP administrators, authors, and instructors
    b. Programmer/Operator to control system

Computer Hardware

1. A computer system offering short turn-around time to facilitate immediate feedback to administrators, authors, instructors, and students
2. Such a system could be installed on the College of Education IBM 1130, the University CDC 3600 or 6500, or the University Administration IBM 360/40
3. Turn-around time at present would be lowest on the IBM 1130 as would cost

Computer Software

1. The programs to manage such an instructional system would be produced by utilizing parts of existing management and student record systems and by writing those parts not yet in existance
2. The programmer/operator, under the direction of the computer consultant would provide such software

Curricular Software

1. For each module there must be available
    a. Instructional objectives
    b. A set of criterion test items for each instructional objective
    c. An alternative instructional module to be used with students not successful on criterion test.

Report-Generative and Student-Records System

1. The type, format, and frequency of reports must be indicated
2. The format and content of the student record is to be identified

The decision to use an instructor-based or computer-based system to implement this evaluative scheme will, of course, depend upon the resources which the implementing institution has available. Regardless of which system is used, however, the basic rationale of BSTEP is retained. In either case, the behavioral science orientation and performance-based criteria are emphasized, with evaluative data relating directly to the behavioral goals identified in the modular objectives.

Conclusion

To summarize, it is proposed that the evaluative data collected on students be directly related to the performance criteria as specified in the program modules. The basic strategy to be used is one which begins with a pre-test to assess student performance and to diagnose individual student needs. Depending upon his performance on the pre-test, the student would either proceed to the next component or be directed to specific instructional activities relating to the objectives he failed on the pre-test. If he needs work on certain objectives, he would proceed from one objective to another as he successfully completed the Curriculum Embedded Tests (CET) used to assess achievement of each objective. At the conclusion of the last CET, the student would take a post-test to determine his overall performance on the component. Student assessment would consist of simply "Pass" or "Fail" for each objective on the pre-test, the CETs, and the post-test, with no grade or class rank given or needed.

This proposal is not limited to use with institutions possessing sophisticated computer systems. While computer-based systems can utilize the evaluative scheme proposed here, institutions not having such equipment can realize many of the same advantages of the scheme through the use of instructor-made goal cards. In either case, the evaluative system focuses on individualized achievement of specific behavioral goals as detailed in each module.

Such a system of evaluative data collection conforms with both the spirit of BSTEP and major theoretical goals of evaluation. Through the use of this system, learning would be emphasized, cooperative program modification would be achieved, and communication with employing agencies would be enhanced.

Program Review

In addition to the following description of a program review the reader is directed to the chapter on Operation and Administration, the chapter on Analysis of Future Society, and the chapter on Evaluation and Benefit/Cost Analysis.

Recommendation

The following plan for program review should be applied when BSTEP is installed as the teacher education program at MSU or at another institution.

Evaluations of the curriculum areas and the program as an entity are as vital to BSTEP as module evaluations. These evaluations of curricular areas and program will be both subjective and objective.

The subjective dimension would involve reviewing and reporting activities of the respective areas and the program as a whole. Explicitly, such a scrutiny could examine the program content, the different tracks available to students within the program, the appropriateness of the program to the present and future societal needs and trends, and the continued in-service educational needs of students in the program.

Objectively, statistical hypotheses would be tested for component and program effectiveness. Such tests necessitate consideration of the performance-based program. Hence, criterion-referenced measures as well as standardized measures would be utilized.

The subjective dimension of program evaluation would consist of an Intra-University organization and an Extra-University group. Structurally, the Intra-University organization could be composed of five area committees and one university committee. The area committee would represent each of the five BSTEP curriculum areas and the university committee could be staffed by the coordinators of the respective area committees, the BSTEP Director, an Elementary Education representative, and a Family and Child Sciences representative.

Functions of each curriculum area committee are:

1. To examine the respective area for thoroughness and continuity, to identify gaps or overlaps among components

2. To examine student activities for relevance and pertinence to the goal of developing teachers steeped in the behavioral sciences and sufficiently knowledgeable in the content of the given areas

3. To review results of statistical studies conducted within the

area, the preceding university committee report and reports of the Extra-University groups

4. To prepare an annual report of committee findings, activities, and recommendations

5. To submit the annual report to the University Committee by February 15 (Each committee member to submit the annual report to his department chairman)

Functions of the University Committee are:

1. To peruse the reports of the area committees and the findings of statistical studies greater in scope than a given area

2. To consider the following questions in view of BSTEP objectives and philosophical base:

    a. Are the area elements necessary and sufficient?

    b. Is each area functioning within the Behavioral Science paradigm?

    c. Is the program preparing teachers who employ the "clinical behavior style"?

    d. Is the program providing a sufficient number of tracks for today's schools?

    e. Is the program preparing the teachers for the future as well as the present?

    f. Is the distribution of students in each track realistic?

3. To prepare an annual report based on the findings and recommendations emanating from the two preceding activities. This report to be completed by June 30 and submitted to:

    a. The Education Policies Council of deans for BSTEP

    b. The chairman of each department participating in BSTEP

    c. The members of the Extra-University groups for program evaluation.

4. To plan and conduct the Extra-University groups' visit which will be held before October 1.

The structure of the Intra-University Committees could be as follows:

	Representatives
General-Liberal Education	Humanities Natural Science Social Science Family & Child Science Elementary Education Three Students BSTEP Director (or asst.) Ex-Officio
Scholarly Modes of Knowledge	Linguistics Communication Fine Arts Children's Literature Social Science Science Mathematics Family & Child Science Elementary Education Three Students BSTEP Director (or asst.) Ex-Officio
Human Learning	Growth & Development Educational Psychology Educational Sociology Educational Philosophy Family & Child Science Elementary Education BSTEP Director (or asst.) Ex-Officio Three Students
Clinical Experiences	Family & Child Science Elementary Education BSTEP Director (or asst.) Ex-Officio Elementary Intern Program Coordinator Intern Consultant Public School Teacher Elementary School Administrator Three Students
Professional Use of Knowledge	Mathematics Reading Language Arts Social Studies Science Elementary Education Family & Child Science Three Students BSTEP Director (or asst.) Ex-Officio

University faculty serving on the above committees would be elected in accordance with the respective department by-laws. Elementary Education and Family and Child Sciences representatives need not be the same persons for all five committees. The student representatives for all five committees could be different individuals. Indeed, there should be five first-year students, elected by BSTEP students to serve on each area committee and similar elections of second-year and third-year students.

The University Committee of the proposed Intra-University organization would be composed of the chairmen from the area committees and other representatives. The whole committee would comprise:

1. BSTEP Director
2. BSTEP Assistant Director (ex-officio)
3. Team Coordinator of:
    a. General-Liberal Education
    b. Human Learning
    c. Scholarly Modes of Knowledge
    d. Professional Use of Knowledge
    e. Clinical Experiences

Adequacy of BSTEP must be evaluated from several standpoints. Internally, the program must be systematically validated to be certain that the products reasonably match the predictions or goals of the program. This requires evaluation on a number of levels. But of equal importance, the program must be evaluated from a standpoint outside both the program and the university educational establishment. Need for this type of evaluation is obvious since the purpose of the program is to produce teachers who have requisite skills and knowledge to teach pupils to live and work in the reality of American society.

For this task, we propose an evaluation committee composed of men of distinction who represent our cultural, industrial, scientific, and spiritual activities. These men should be further qualified by a personal commitment to education in the United States. Criticism is leveled daily that education is outdated and does not adequately meet the needs of the individual or society. Thus, education is held responsible in large measure for the many ills of society today: frustration of the individual; loss of individual freedom; jobs available with no qualified applicants; jobless thousands with unsuitable attitudes and occupational skills for work. And yet, for what are we supposed to educate? Do we educate to meet existing technical needs? The dozen years since Sputnik have witnessed the education of an oversupply of aerospace engineers. Do we educate for general development in the arts and sciences? Perhaps, but in this age of specialization one must possess specific skills to be employable. Thus, education must achieve a balance within present unbalanced social conditions.

Therefore, we propose a committee to evaluate yearly the adequacy of the BSTEP program from the standpoint of broad societal needs. In addition to the evaluation report we would propose that the committee issue a public report or statement concerning the problems of developing public education programs and corresponding teacher education programs to meet current and projected societal needs. Since this committee would not be part of the educational establishment it could provide the taxpaying citizens with information useful to them in their evaluation of public education. The taxpayer is the ultimate evaluator of BSTEP and we would not like this program to be evaluated on the inadequate basis of current public information concerning teacher education.

As stated earlier, the committee should be representative of the major facets of American society. As a starting point, the following positions are suggested, and would be filled by nominations by professionals within each area.

1. Physical, Biological, Earth Sciences
2. Social Science
3. Industrial Science
4. Philosophy: 1 Position
5. Art: 1 Position (painter, writer, dramatist, sculptor)
6. Industry: 1 Position
7. Finance: 1 Position
8. Government: 1 Position
9. Religion: 1 Position
10. Public Education: 1 Position
11. Communications Media: 1 Position

In addition to these eleven positions, we would recommend one person who is a recognized critic of education. The type of person we have in mind would be a Conant or Silberman. Such a person would be helpful to the committee in providing focus and direction.

INTRA-University

Curriculum Area Committees:

- General-Liberal Education
- Scholarly Modes of Knowledge
- Professional Use of Knowledge
- Clinical Experiences
- Human Learning

University Committee

EXTRA-University Groups

Distinguished Non-educators Committee

Futurist Orientation Committee

Potential Program Evaluation Yearly Schedule:

February 15	Area Committee Reports Due
June 30	University Committee Reports Due
September 30	Extra-University Report Due
November 15	Committees Formed and Organized

Figure 2:6 Program Evaluation Organization

Chapter 3

CLINICAL EXPERIENCES

Introduction

A major objective of BSTEP is to produce elementary teachers with knowledge and skills to engage in teaching as clinical practice and to be change agents for the continuous improvement of educational programs for children. This objective necessitates a teacher preparation program that makes the teacher knowledgeable of self, children, schools, and community agencies. The laboratory or clinical experience has typically been considered the most significant aspect of such teacher preparation.

Even so, this vital part of professional preparation generally has been much too narrow in scope and of rather short duration. Traditionally, field experience has been restricted to student teaching and internship with these experiences usually occurring during the latter one-third or one-fourth of the teacher's undergraduate program. A common complaint about presently operating field phases of teacher preparation is that the experiences are too little and too late.

If we are to develop teacher-scholars who think-act-interact as they deal realistically with the complex daily tasks of teaching we need to provide a much more comprehensive and intensive program of clinical experiences than has generally been available in teacher preparation programs in the past. We need to move from the highly structured course and time mass approach to a flexible, individualized program of experiences so that the prospective teacher is motivated to seek answers to his own questions rather than those of the instructor so that the knowledge and skills learned are recognized as transferable to the myriad situations faced by a teacher. As Harry Rivlin states regarding professional laboratory experiences, "the time has come to eliminate the fixed time limits for each activity and to extend them or to abbreviate them as the individual student seems to need."[1]

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[1] Harry N. Rivlin. "Theory underlying professional Laboratory Experiences" Theoretical Bases for Professional Laboratory Experiences in Teacher Education, Forty-Fourth yearbook, The Association for Student Teaching, 1965, p. 57

A four-year intensive Clinical Program of developmental experiences is proposed as feasible. The experiences actively engaged the prospective teacher in activities that bring him into direct confrontation with a wide range of choices that relate to self, children, schools, and community agencies. The program is divided into major emphasis areas, but no single area is considered an entity; rather they are interrelated and even though one area may claim sharper focus during a particular period of the program there is a gradual changing of emphasis from one area to another as the student moves through the teacher preparation program.

The five major emphasis areas constituting the Clinical Experiences Program are: Exploring Teaching, Career Decision, Analytical Study of Teaching, Pre-Internship, and Internship. The relationships and changing emphasis of the five areas are portrayed in Figure 3:1. The Clinical Experiences begin with Exploring Teaching in the freshman year and continue throughout the four years culminating in Internship during the senior year. Two continuity threads running throughout the program are Career Decisions and Analytical Study of Teaching. These emphasis areas are designed especially to help the student bring into focus all his Clinical Experiences. Also these two continuity threads serve as the bases for assisting the prospective teacher in relating his other BSTEP experiences, such as Human Learning and Professional Use of Knowledge, to self, children, school, and community.

Clinical Experiences have as their main purposes to help the student 1) make earlier and better career decisions, 2) become closely associated with the profession of teaching, 3) interpret and synthesize his educational experiences as they relate to teaching, and 4) develop a feeling of competence and confidence to begin a career of teaching.

The proposed Clinical Experiences Program is based upon the following basic assumptions:

1. There should be a progressive intensity of contact with children and schools beginning in the freshman year and continuing through the senior year.

2. Clinical experiences should involve both simulated and actual situations.

3. The program should provide alternate routes for the general classroom teacher or for the subject-matter specialist.

4. The program should provide differentiation for those planning to teach preschool (age 3-6), primary school (age 6-10), or middle school (age 10-13).

5. The single-purpose performance-based module should serve as the basic unit of learning-teaching.

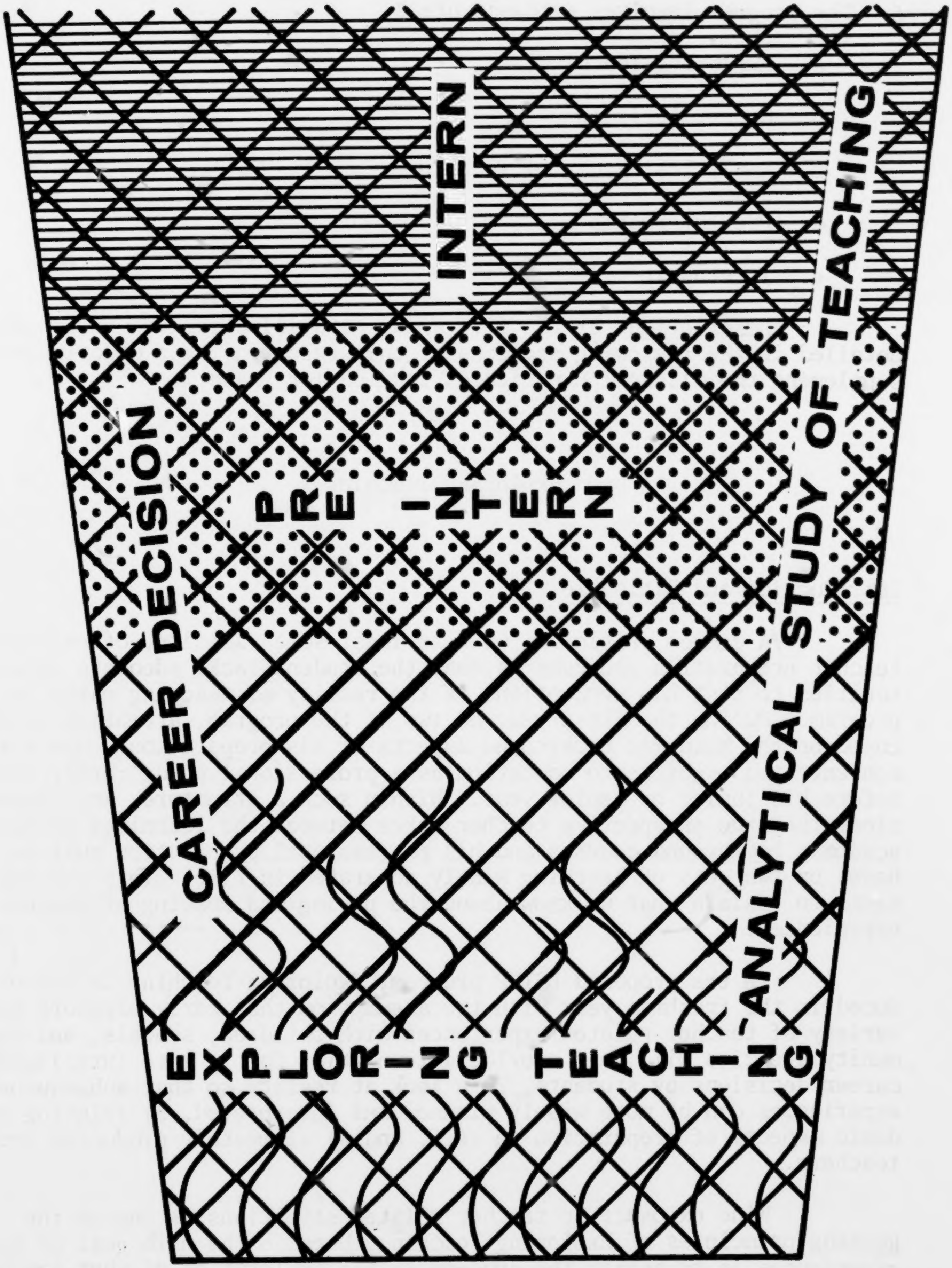
INTERN
PRE INTERN
CAREER DECISION
ANALYTICAL STUDY OF TEACHING
EXPLORING TEACHING

Figure 3:1 Relationship and Changing Emphasis of Clinical Experiences

6. The program involves emphasis areas

   a. Exploring Teaching

   b. Career Decision

   c. Analytical Study of Teaching

   d. Pre-Internship

   e. Internship

Descriptions of the five areas with illustrative modules are detailed in the following sections of this report. These descriptions supplement the Clinical Experiences section for Phase I.

Exploring Teaching

Introduction and Rationale

A common criticism, with at least some validity, of existing teacher preparation programs is that the student lacks adequate opportunities to test his perceptions of the reality of teaching early in the program. During the first year or two of the program, attention is focused on the academic background aspects of his preparation. His first concentrated exposure to education as a professional study rarely occurs before his junior or senior year. Within such a structure, any connections that the prospective teacher makes between the learnings of his academic background courses and his professional preparation must be based on two sets of learning widely separated in time. This procedure seems to violate what we know about the pacing and spacing of learning experiences.

In the proposed BSTEP program, Exploring Teaching is introduced in the freshman year with the assumption that early exposure to a variety of teacher related experiences with children, schools, and community agencies will help provide a foundation for 1) more intelligent career decisions by students, 2) a look at reality so that subsequent experiences can be more wisely planned and interpreted, 3) relating academic aspects of preparation to self, and 4) ultimately producing better teachers.

Wide exposure to teacher related situations is one of the guiding principles of Exploring Teaching, because the main goal of the experiences is to assist the student in his exploration of what teaching is all about--the many tasks and responsibilities of a teacher, as they relate to self, school setting, and community institutions and agencies.

A variety of early experiences related to teaching appears vital to the student in making valid, rational decisions within the range of career alternatives available to him.

Experiences

The scope of the experiences must be broad enough and the sequence flexible enough to provide for the individual differences of students. Some students enter college with many experiences relevant to teaching while others enter with few such experiences. Some entering students have already made commitments, at least tentatively, to become teachers; other students have not made even tentative career decisions. Any student who indicates an interest should be encouraged to explore teaching. The kinds of exploratory experiences in which the student participates should be based on the student's interests and needs, and the selection and sequence of experiences should be jointly decided by the student and faculty member(s) assigned to Exploring Teaching.

If it is determined that the student already has had the basic experience described in a module, the module may not be a profitable one to explore. On the other hand, a module can be repeated profitably for a more intensive look or may be redesigned for a different purpose. For example, modules may be redesigned to provide slightly different experiences for the unsuccessful student so that he does not simply do the same thing again and again.

Four sets of experiences constitute Exploring Teaching. Each set of experiences includes several modules. Some of these modules will likely be required of all students, others may be elective. Most of the modules will be completed during the freshman year, but some can be scheduled later depending on the individual needs of the students. The four sets of experiences are: classroom, non-academic school assignment, community assignment, and exposure to other cultures.

> Classroom - A classroom assignment will be required during the freshman year for one term, one-half day per week in a single classroom. This will be the only Exploring Teaching experience taken during the term. This experience will include these kinds of activities:
>
> 1. Observation and participation: Examples of observation assignments would be: observing the behavior of one child for a designated period of time, observing a small group read or participate in some group activity, observing a child as he participates in three or more different learning activities during the week, or observing the teacher as she motivates children for a particular lesson. Possible participation experiences would be: assuming

the role of teacher's aide grading objective tests, distributing supplies, collecting milk money, and reading a story.

2. Instruction: Because the college student at this stage has little or no professional preparation or teaching experience, care must be taken that this instructional role be restricted and done only with the approval and under the direct supervision of the classroom teacher. The student's experience might include providing practice or drill to one child or a small group using topics already developed by classroom teacher, conveying or sharing information relative to an ongoing topic or unit; or selecting, with approval of classroom teacher, something to teach that the child knows little or nothing about. The student's purpose in this tutoring experience would be to obtain answers to such questions as: What was I trying to teach? What was involved? What did I do? What did the child do? Was there interaction? What processes were involved? What did I learn that would be applicable to a similar situation?

Non-academic School Assignments - These experiences are designed to broaden knowledge and understanding. They would involve visiting several classrooms, perhaps in different schools as well as participating in simulated experiences to extent the student's understanding of children of different age, grade, ability, interest, sex, socio-economic background. The student would serve as an assistant to playground, lunchroom, library, audio-visual, or safety patrol staffs. The student also would observe and study the diverse personnel that make up a school staff - administrators, classroom teachers, secretaries, custodians, and special area personnel to explore how he would relate and work with practitioners.

Community Assignments - Not all education takes place in the classroom. To open more doors to teachers and to view the institutions of education (schools) in relationship to other community institutions and agencies, students would participate in experiences selected from a list such as the following:

Home visitations with social worker, home counselor

Visitation to Probate Court

Visitation to half-way house or similar experience

Visitations or participation in such community agencies as YMCA or YWCA, community action centers, playgrounds, Boy Scouts, governmental agencies

Trip with juvenile officers on their rounds about the community

Visitations to private schools, nurseries, schools for the handicapped, Head Start programs

Visitations to Intermediate School District programs and offices

Visitations to school board meetings, teacher meetings, education association meetings

Exposure to other cultures - To completely decide if he wishes to teach and what kinds of youngsters and community he prefers, the student needs contacts and experiences in different settings. The student might need to return to the school or community setting with which he feels most familiar to collect additional information to verify his concepts. For example, the student whose background is rural would explore both an inner city setting and a country or consolidated school.

As mentioned earlier, each set of experiences constituting Exploring Teaching would contain several modules to provide alternatives. Relevant modules in the original BSTEP Report are filed in the Informational Retrieval System under the following accession numbers:

02508
02509
02514
02515
02516
02517
02518
02519
02528
02529
02550
02551
02552
02554
02576
02577
02578
02579
02580
02581
02582
02583
02584
02585
02586
02587
02588
*02640
*02641
*02642
*02643

*These are particularly appropriate during the first week of classroom visitation.

The following are additional modules that have been since developed specifically for students interested in preschool but which can easily be adapted to other levels of interest:

```
*OBJECTIVES    TO ASCERTAIN THAT TRAINEE CAN DEFINE AND DESCRIBE CHILD'S 02701 01
               MODES OF REACTION TO OTHER CHILDREN IN THE GROUP          02701 02
*PREREQUISITE  READING ON TOPIC STUDY OF INDIVIDUAL CHILDREN. K. REED.   02701 03
               THE NURSERY SCHOOL. SECTION III                           02701 04
*EXPERIENCE    WRITTEN REPORT ON INTERACTION PATTERNS. SELF SUFFICIENCY  02701 05
               AND CREATIVITY OBSERVED IN THE GROUP ON ONE PROGRAM DAY   02701 06
*SETTING       COMMUNITY PRESCHOOL GROUP                                 02701 07
*LEVEL         PRESCHOOL - KINDERGARTEN                                  02701 08
*GENERAL       ALL CANDIDATES                                            02701 09
*HOURS         2 -3                                                      02701 10
*EVALUATION    CRITICAL REVIEW OF WRITTEN REPORT BY FIELD TEACHER        02701 11
               DISCUSSION WITH SMALL GROUP OF TRAINEES AND PROFESSOR     02701 12
*FILE          EXPLORING TEACHING. PRE-SCHOOL                            02701 13
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*OBJECTIVE      TO PROVIDE THE TRAINEE WITH THE OPPORTUNITY TO INTERACT   02702
                WITH THE YOUNG CHILD AND TO INTERPRET THE CHILD'S BEHAVIOR02702
                IN RELATION TO HIS HOME ENVIRONMENT                       02702
*PREREQUISITE   RELATED READING (BRECKENRIDGE + MURPHY, GROWTH AND        02702
                DEVELOPMENT OF YOUNG CHILD, CHAPTER 12, PHILOSOPHY OF     02702
                ADULT-CHILD RELATIONSHIPS).  PREVIOUS OBSERVATION OF A    02702
                CHILD IN HIS HOME                                         02702
*EXPERIENCE     TRAINEE WILL CARE FOR THE YOUNG CHILD IN HIS HOME         02702
                INCLUDING AS MANY ASPECTS OF HIS DAILY ACTIVITIES AS      02702
                POSSIBLE                                                  02702
*SETTING        LOCAL COMMUNITY                                           02702
*MATERIALS      BLANK                                                     02702
*LEVEL          PRESCHOOL                                                 02702
*GENERAL        ALL CANDIDATES                                            02702
*EVALUATION     WRITTEN EVALUATION TO INCLUDE SUMMARY OF FAMILY, HOME     02702
                ENVIRONMENT AND ANALYSIS OF THE EXPERIENCE                02702
*FILE           EXPLORING TEACHING PRE-SCHOOL, CHILD CARE                 02702
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*OBJECTIVES     TO ACQUAINT THE TRAINEE WITH A COMMUNITY AGENCY           02703
                CONCERNED WITH SERVICES FOR YOUNG CHILDREN AND THEIR      02703
                FAMILIES                                                  02703
*PREREQUISITE   KNOWLEDGE OF RELEVANT AGENCIES IN A SPECIFIC COMMUNITY AND02703
                KNOWLEDGE OF ADULT INTERVIEW TECHNIQUES                   02703
*EXPERIENCE     TRAINEE WILL SELECT A PUBLIC AGENCY AND INTERVIEW AN      02703
                AGENCY REPRESENTATIVE REGARDING FUNCTION AND SCOPE OF     02703
                COMMUNITY SERVICE                                         02703
*SETTING        BLANK                                                     02703
*MATERIAL       BLANK                                                     02703
*HOURS          2                                                         02703
*GENERAL        ALL CANDIDATES                                            02703
*LEVEL          ALL GRADES                                                02703
*FILE           EXPLORING TEACHING, COMMUNITY AGENCY                      02703
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*OBJECTIVES     TO ACQUAINT THE TRAINEE WITH THE FIELD INTERACTION OF THE 02704
                COMMUNITY SERVICE AGENT                                   02704
*PREREQUISITE   KNOWLEDGE OF THE AGENCY'S STATED PURPOSE AND FOCUS        02704
*EXPERIENCE     TRAINEE WILL ACCOMPANY COMMUNITY SERVICE AGENT SUCH AS A  02704
                NURSE, CASE WORKER, HOME SERVICE COUNSELOR OR HEAD START  02704
                FAMILY SERVICE AGENT IN HIS CONTACT IN FAMILIES WITH      02704
                YOUNG CHILDREN                                            02704
*SETTING        LOCAL COMMUNITY                                           02704
*MATERIALS      BLANK                                                     02704
*HOURS          3-4                                                       02704
*LEVEL          PRESCHOOL                                                 02704
*FILE           EXPLORING TEACHING, AGENCY SERVICE                        02704
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*OBJECTIVES     TO EXPOSE TRAINEE TO PROGRAM FOR CHILDREN OF VARIED INCOME02705
                AND ETHNIC BACKGROUNDS                                    02705
*PREREQUISITE   KNOWLEDGE OF ENVIRONMENTAL CHARACTERISTICS OF THE         02705
                POPULATION INVOLVED                                       02705
*EXPERIENCE     TRAINEE WILL PARTICIPATE AS AN AIDE IN ORDER TO ASCERTAIN 02705
                ADAPTATIONS NECESSARY FOR SPECIFIC SUB-GROUP POPULATIONS  02705
*SETTING        A PROGRAM ESTABLISHED FOR LOW INCOME AND/OR MINORITY GROUP02705
                CHILDREN                                                  02705
*MATERIALS      NONE                                                      02705
*LEVEL          PRESCHOOL                                                 02705
*GENERAL        ALL CANDIDATES                                            02705
*HOURS          1-3                                                       02705
*EVALUATION     A WRITTEN EVALUATION OF PROGRAM ASPECTS TYPICAL OF THE    02705
                SPECIFIC GROUP                                            02705
*FILE           EXPLORING TEACHING, PRE-SCHOOL, MINORITIES                02705
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*OBJECTIVES       TO ENABLE TRAINEE TO EVALUATE THE PHYSICAL ENVIRONMENT OF  02706 01
                  THE CLASSROOM IN THE CONTEXT OF UTILIZATION OF SPACE AND   02706 02
                  CREATION OF SPECIFIC LEARNING CENTERS                      02706 03
*PREREQUISITE     AN UNDERSTANDING OF THE COMPONENTS OF PRESCHOOL            02706 04
                  CURRICULUM.  (HAMMOND, GOOD SCHOOLS FOR YOUNG CHILDREN)    02706 05
*EXPERIENCE       THE TRAINEE WILL DRAW A SCALED FLOOR PLAN OF THE           02706 06
                  PRE-SCHOOL ROOM OBSERVED.  HE WILL THEN IDENTIFY LEARNING  02706 07
                  CENTERS, TOILET FACILITIES, FOOD PREPARATION AREAS,        02706 08
                  STORAGE, AND OUTDOOR ACCESS, ETC                           02706 09
*SETTING          ANY PHYSICAL FACILITY FOR A PRESCHOOL PROGRAM              02706 10
*MATERIALS        NONE                                                       02706 11
*LEVEL            PRESCHOOL                                                  02706 12
*GENERAL          ALL CANDIDATES                                             02706 13
*HOURS            2-3                                                        02706 14
*EVALUATION       TRAINEE WILL SUBMIT A FLOOR PLAN OF THE PHYSICAL FACILITY  02706 15
                  WITH LEARNING CENTERS IDENTIFIED, WITH COMMENTS AND        02706 16
                  RECOMMENDATIONS                                            02706 17
*FILE             EXPLORING TEACHING, CLASSROOM SIZE                         02706 18
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*OBJECTIVES       EXPOSURE TO POLICY MAKING BODY OF A PRIVATELY RUN          02707 01
                  PRESCHOOL PROGRAM                                          02707 02
*PREREQUISITE     FAMILIARITY WITH SCHOOL FACILITY, PROGRAM CONTENT, AND     02707 03
                  STATED GOALS.  KNOWLEDGE OF THE CHILDREN SERVED BY THE     02707 04
                  SCHOOL AND THEIR HOME BACKGROUNDS                          02707 05
*EXPERIENCE       STUDENTS WILL ATTEND A REGULAR MEETING OF THE BOARD OF     02707 06
                  DIRECTORS OR PARENT COUNCIL OF A PRIVATE SCHOOL OR         02707 07
                  COOPERATIVE PRESCHOOL.  THE STUDENTS WILL DISCUSS WITH THE02707 08
                  BOARD OR AN INDIVIDUAL MEMBER THE FUNCTION AND AUTHORITY   02707 09
                  OF THE GOVERNING BODY                                      02707 10
*SETTING          COMMUNITY SCHOOL                                           02707 11
*MATERIALS        BLANK                                                      02707 12
*LEVEL            PRESCHOOL                                                  02707 13
*GENERAL          ALL CANDIDATES                                             02707 14
*HOURS            1-1/2                                                      02707 15
*EVALUATION       STUDENT ACCURATELY RELATES DESCRIPTION OF ORGANIZATIONAL   02707 16
                  PATTERNS TO A SMALL GROUP OF FELLOW TRAINEES               02707 17
*FILE             EXPLORING TEACHING, PRIVATE SCHOOL                         02707 18
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*OBJECTIVES       TO ENABLE STUDENT TO OBSERVE THE YOUNG CHILD IN THE        02708 01
                  CONTEXT OF HIS FAMILY AND HOME ENVIRONMENT                 02708 02
*PREREQUISITE     READING TO FAMILIARIZE TRAINEE WITH FAMILY INTERACTION     02708 03
                  PATTERNS (DUVALL, E. FAMILY DEVELOPMENT, CHAPTER 9,        02708 04
                  FAMILIES WITH PRESCHOOL CHILDREN                           02708 05
*EXPERIENCE       THE TRAINEE WILL OBSERVE A CHILD IN HIS HOME WITH OTHER    02708 06
                  FAMILY MEMBERS PRESENT                                     02708 07
*SETTING          LOCAL COMMUNITY                                            02708 08
*MATERIALS        BLANK                                                      02708 09
*LEVEL            PRESCHOOL                                                  02708 10
*GENERAL          ALL CANDIDATES                                             02708 11
*HOURS            2-3                                                        02708 12
*EVALUATION       WRITTEN SUMMARY AND DISCUSSION OF EXPERIENCE WITH          02708 13
                  PROFESSOR AND SMALL COLLEGE GROUP                          02708 14
*FILE             EXPLORING TEACHING, FAMILY, HOME                           02708 15
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Career Decision

Rationale for the Career Decision Area

There is evidence that many beginning teachers leave the profession after only one or two years experience, and that some students who complete an elementary teacher preparation program never enter teaching.[2] This is an obvious waste of human and financial resources. No doubt there are many reasons for these phenomena, some of which are beyond the control of those who prepare elementary teachers. Four contributing factors which can be controlled to a degree by those who prepare teachers can be hypothesized as follows:

1. Some students progress far into the teacher preparation program before they become aware of the personal and professional reality of teaching. They almost complete their four-year program before they learn what teaching is all about.

2. Some teachers complete a year or more of teaching before they discover that they find little satisfaction in working with children, and realize that they have chosen the wrong profession.

3. Some students fail to discover the career alternatives open to them until near completion of the undergraduate preparation program, or only after entering teaching.

4. Some students make decisions regarding the alternatives based on faulty or incomplete information.

While it may be virtually impossible to eliminate these factors entirely in preparing teachers, the Career Decision area is designed to develop some basic understandings about teaching and to provide adequate information on career alternatives early in the preparation program.

Career Decision has three major purposes which culminate in rational career decisions.

1. To make the student aware, early in his preparation, of the career alternatives open to him within elementary education

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[2] Bernard R. Corman and Ann G. Olmstead, The Internship in the Preparation of Elementary School Teachers. (East Lansing, Michigan: Bureau of Educational Research, Michigan State University, 1964) pp. 26-29.

2. To help the student develop a conceptual structure for making rational decisions regarding career alternatives. This structure provides alternatives and sources of information essential to rational decisions

3. To help the student explore various sources of information which will contribute to rational career decisions

There are four major kinds of knowledge which the entering student may or may not hold. He may have a wealth of accurate information about children and their behavior, the teaching-learning process, teaching as a profession, and about himself as a person in the school settings; or his information in any of these areas may be limited or inaccurate. Adequate and accurate information about these areas gained through guided experiences should contribute to rational career decisions.

The Career Decision area is designed to help organize and build upon the experiences developed in Exploring Teaching, and is very closely related to the Analytical Study of Teaching. Some students enter teacher education with an excellent understanding of the alternatives open to them and the data needed for rational decision making. Other students need more guidance in developing a rationale for making career decisions. Many students will make tentative decisions early in the program; some will want to revise their decisions. Provisions will be made to accommodate the varying degrees of development among students.

The experiences in Career Decision provide opportunities and encouragement for the student to test his perceptions of reality regarding children and their behavior, the teaching-learning process, teaching as a profession, and of himself in the school setting. In this way his basic alternatives will become apparent to him, including the alternative not to prepare for a teaching career. To ably assist students with these decisions, instructors must be well acquainted with each student. A low faculty-student ratio is imperative. In some respects this component takes on many of the characteristics of a counseling situation, with the faculty member assuming a role similar to that of a vocational counselor.

Dimensions of the Career Decision Area

The experiences for the Career Decision area are derived from two dimensions. One dimension encompasses the career alternatives which face the student. A second dimension involves the various kinds of information and experiences the student needs to make rational decisions regarding each career alternative.

The first dimension is based on the following questions:

1. Shall I consider teaching as a career?

2. Shall I prepare to become an elementary teacher?

3. With children in what age group am I most likely to be effective?

4. Do I prefer the activities and role of a general classroom teacher, or should I specialize in a subject area?

5. If I specialize, what subject area is most suitable to my interests and skills?

6. In what type of school sociological setting am I most likely to be effective?

These questions and their alternatives are presented in diagrammatic form in Figure 3:2.

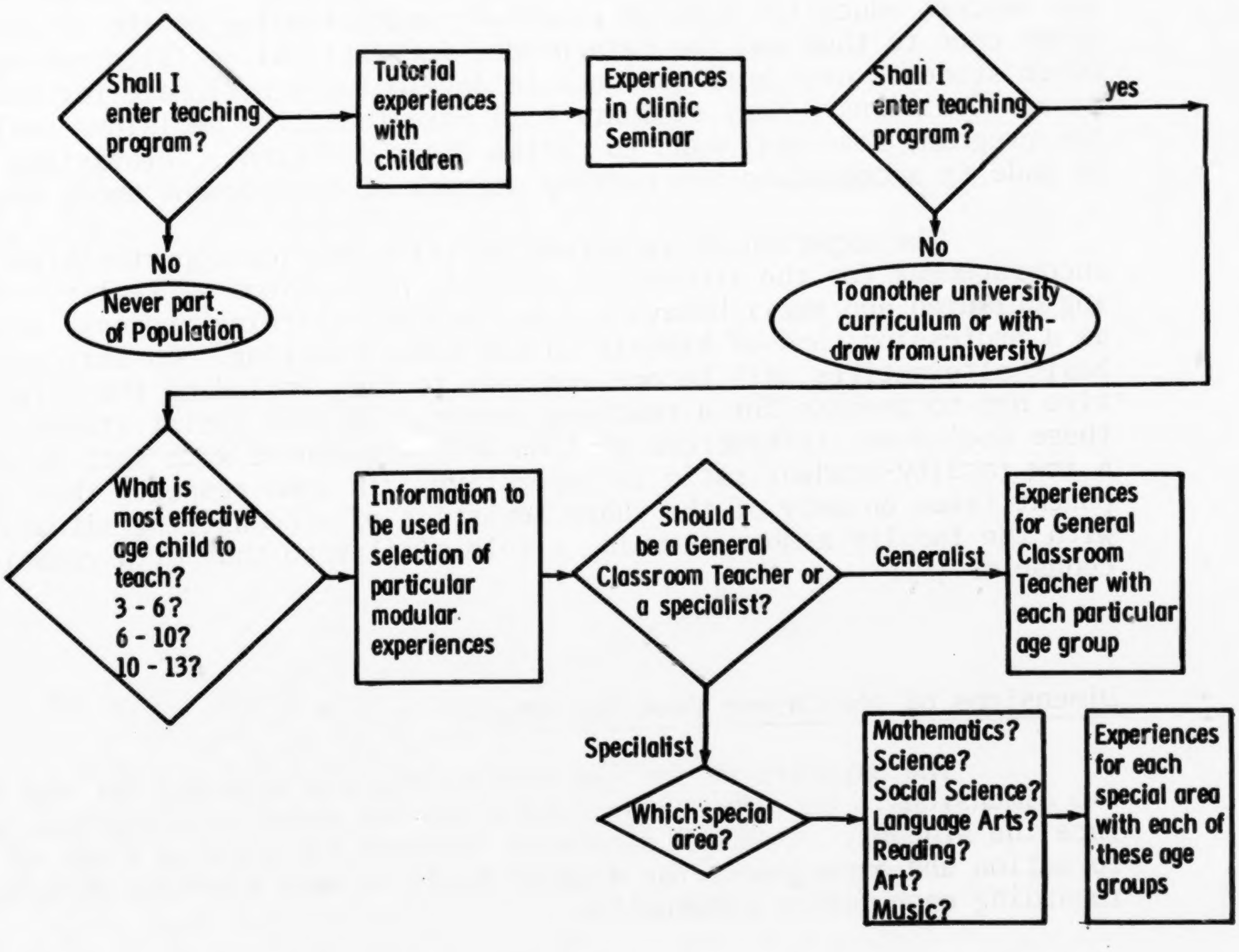
Shall I enter teaching program?
No
Never part of Population
Tutorial experiences with children
Experiences in Clinic Seminar
Shall I enter teaching program?
yes
No
To another university curriculum or withdraw from university
What is most effective age child to teach?
3 - 6?
6 - 10?
10 - 13?
Information to be used in selection of particular modular experiences
Should I be a General Classroom Teacher or a specialist?
Generalist
Experiences for General Classroom Teacher with each particular age group
Specialist
Which special area?
Mathematics?
Science?
Social Science?
Language Arts?
Reading?
Art?
Music?
Experiences for each special area with each of these age groups

Figure 3:2 Career Decision Choice Process

The second dimension for determining Career Decision experiences essential to rational decisions for the major alternatives consists of four kinds of information:

1. Information about children and their behavior

2. Information about the teaching-learning process

3. Information about the professional aspects of teaching

4. Information about self in relation to teaching

When these two dimensions are placed in a matrix form, the cells suggest questions which are then used to determine the student experiences for the component. The following matrix (Figure 3:3) is based on these two dimensions, except that the first question of dimension one, "Shall I consider teaching as a career?" is not included. The assumption is made that any student who participates in the Career Decision experience is considering teaching as a career.

Student Experiences in Career Decision

The questions which appear in the cells of the question-information category matrix (Figure 3:3) suggest the learning experiences for this component. Although these questions have been placed in distinct cells in the matrix, more than one question may suggest the same general kind of experience, but with different purposes. Some experiences not suggested by questions in the matrix may be of value.

The following are illustrative learning experiences suggested by the matrix.

> Observation - First hand experiences are most helpful in gaining information upon which to base answers to many of the questions raised in the matrix. These observations will occur in both in-school and out-of-school contexts. Students will observe children of various age levels and socio-economic backgrounds. Observing elementary teachers who are generalists, specialists, primary, intermediate, and upper grade professionals as part of school organizational patterns will also be included.
>
> Tutoring - This is an excellent source of first hand answers to the matrix questions. Most of the tutoring experiences will occur in Exploring Teaching, but the understandings of children's behavior and of self which stem from the tutoring activities should make vital contributions to rational career decisions. Most of the tutoring will be done with elementary school age pupils but knowledge of what teaching entails may also be gained from tutoring college students.

Career Decision Questions	1) Children's Behavior	2) Teaching-Learning Process	3) Teaching as a Profession	4) Self-Understanding
A) Shall I Prepare to Become a Teacher	How do children behave in school? Out of school?	Generally how do children learn?	What kinds of contacts with children does teaching offer?	Do I enjoy working with children? In school? Out of school? How do children seem to react to me? What are my personality characteristics?
B) With What Age Children Am I Likely to Be Most Effective?	How do children ages 3-6 behave? ages 7-9? ages ages 10-13?	What similarities and differences are there in the way children of different ages learn?	What are the activities of a primary teacher, an intermediate grade teacher? What are the advantages and disadvantages of teaching at each level?	Which age children do I enjoy working with most?
C) Specialist or Generalist	What kinds of contacts with children will I have as a generalist? As a specialist? How do children react to various subject areas?	What similarities and differences are there in the way children learn in the various subject areas? What motivational factors are inherent in each of the subject areas? How is the structure of a subject area related to learning?	What are the activities of the specialist as compared to the generalist? What are the professional opportunities for the generalist? The specialist?	Am I interested in one subject area more than another? What are the academic requirements in preparing to be a generalist? A specialist?
D) Sociological Setting	How do children from upper-class, middle-class, lower-class homes behave? What are their respective needs?	What are the similarities and differences in the way children from upper-class, middle-class, or lower-class homes learn?	What rewards and problems are there in working with lower-class and middle-class or upper-class children? In working with children from two or more of the socioeconomic groups at the same time?	With what socioeconomic class child do I relate to best?

Figure 3:3 Career Decision Information Categories

Simulation - Some desired experiences are difficult to obtain through observation and contacts with children, because of the difficulty in controlling variables. These experiences will be simulated through the use of video and audio equipment, films, slides, pictures, and other media.

Interview and Lectures - Information of a helpful nature which is related to career decisions can be gained by talking with and listening to elementary teachers, administrators, representatives of teacher's organizations, subject area specialists, and child development specialists. Interviews and lectures are vehicles for these learnings.

Group Discussions - Small group discussions among students, and students and faculty will extend and clarify the experiences developed through the four techniques described above. The student will be encouraged to reflect on these experiences and integrate them into a perspective of the reality of teaching. Discussion sessions should be particularly helpful as the student attempts to project himself into the teaching situation.

Modules already prepared and pertinent to the Career Decision area are filed in the Informational Retrieval System under the following accession numbers:

*02626
02627
02628
02629
02630
02631
02632
02633
02634
02635
02636
02637
02638
02639
*02640
*02641
*02642
*02644
*02645
*02654
*02657

* - Designates particularly useful modules for Career Decision
Several additional modules are found on the following pages.

Organization of Career Decision

This component is an integral part of the four-year sequence of Clinical Experiences. In terms of student-faculty contact time, it begins in the first year and occurs chiefly during the second year. During the first year, students develop the conceptual framework for making career decisions. In the second year, they are assisted in gaining more information and, finally, they are guided as they make tentative career decisions. During the third and fourth years, through Analytical Study of Teaching, Pre-internship, and Internship, the student

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*OBJECTIVES     THE TRAINEE WILL IDENTIFY AND DESCRIBE A NUMBER OF THE        02709 01
                ACTIVITIES OF THE KINDERGARTEN TEACHER                        02709 02
*PREREQUISITE   OBSERVATION OF A KINDERGARTEN CLASS                           02709 03
*EXPERIENCE     TRAINEE PARTICIPATES AS A MEMBER OF A GROUP OF                02709 04
                APPROXIMATELY 10 TRAINEES IN DISCUSSING THEIR OBSERVATION     02709 05
                OF KINDERGARTEN CLASSES                                       02709 06
                                                                              02709 07
*SETTING        SMALL CLASSROOM                                               02709 08
*MATERIALS      NONE                                                          02709 09
*LEVEL          ALL GRADES                                                    02709 10
*GENERAL        ALL CANDIDATES                                                02709 11
*HOURS          ONE HOUR                                                      02709 12
*EVALUATION     TRAINEE ACTIVELY PARTICIPATES IN GROUP DISCUSSION             02709 13
*FILE           CAREER DECISION, KINDERGARTEN
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*OBJECTIVES     THE TRAINEE WILL DESCRIBE HIS REACTION TO HIS INITIAL         02710 01
                TUTORING EXPERIENCE                                           02710 02
*PREREQUISITE   THE TRAINEE HAS EXPERIENCED A ONE-TO-ONE TUTORING             02710 03
                EXPERIENCE                                                    02710 04
*EXPERIENCE     TRAINEE DESCRIBES ORALLY AND DISCUSSES HIS INITIAL            02710 05
                TUTORING EXPERIENCE.  THE FOCUS OF THE DISCUSSION WILL BE     02710 06
                ON THE TRAINEE'S REACTIONS TO THE EXPERIENCE AND HIS          02710 07
                FEELINGS OF SUCCESS OR FAILURE                                02710 08
*SETTING        CONFERENCE ROOM                                               02710 09
*MATERIALS      NONE                                                          02710 10
*LEVEL          ALL GRADES                                                    02710 11
*GENERAL        ALL CANDIDATES                                                02710 12
*HOURS          30 MINUTES                                                    02710 13
*EVALUATION     TRAINEE CAN VERBALIZE HIS FEELINGS                            02710 14
*FILE           EXPLORING TEACHING, CAREER DECISION, TUTORING                 02710 15
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*OBJECTIVES     THE TRAINEE WILL DESCRIBE THE MAJOR PURPOSES AND              02711 01
                ACTIVITIES OF THE MEA AND LOCAL EDUCATION ORGANIZATION        02711 02
*PREREQUISITE   THE TRAINEE WILL HAVE LISTENED TO A PRESENTATION OF THESE     02711 03
                TOPICS BY AN MEA AND LOCAL EDUCATION MEMBER                   02711 04
*EXPERIENCE     THE TRAINEE WILL PARTICIPATE IN A SMALL GROUP DISCUSSION      02711 05
                ON THESE TOPICS                                               02711 06
*SETTING        SMALL CLASSROOM OR CONFERENCE ROOM                            02711 07
*MATERIALS      ANY MATERIAL DISTRIBUTED BY LECTURERS                         02711 08
*LEVEL          ALL GRADES                                                    02711 09
*GENERAL        ALL CANDIDATES                                                02711 10
*HOURS          FORTY-FIVE MINUTES                                            02711 11
*EVALUATION     INSTRUCTOR JUDGEMENT OF QUALITY AND QUANTITY OF TRAINEE       02711 12
                PARTICIPATION                                                 02711 13
*FILE           CAREER DECISION, MEA                                          02711 14
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*OBJECTIVES     THE TRAINEE WILL INDICATE, IN WRITING, WHY HE WANTS TO BE 02712
                AN ELEMENTARY TEACHER, HOW HE FEELS ABOUT TEACHING, AND   02712
                WHAT EFFECTS HE WOULD LIKE TO HAVE ON CHILDREN            02712
*PREREQUISITE   COMPLETION OF EXPLORING TEACHING COMPONENT AND TWO TERMS  02712
                OF CAREER DECISION COMPONENT                              02712
*EXPERIENCE     THE TRAINEE IS ASSIGNED THE POSITION PAPER.  UPON         02712
                COMPLETION, A CONFERENCE WITH THE COMPONENT INSTRUCTOR IS 02712
                HELD                                                      02712
*SETTING        CLASSROOM                                                 02712
*MATERIALS      NONE                                                      02712
*LEVEL          ALL GRADES                                                02712
*GENERAL        ALL CANDIDATES                                            02712
*HOURS          FOUR                                                      02712
*EVALUATION     INSTRUCTOR JUDGMENT BASED ON POSITION PAPER AND ONE TO ONE02712
                CONFERENCE                                                02712
*FILE           CAREER DECISION, PERSONAL GOALS                           02712

*OBJECTIVES     THE TRAINEE WILL ATTEND A LECTURE SESSION AT WHICH AN MEA 02713
                OFFICIAL AND A LOCAL EDUCATION ASSOCIATION MEMBER WILL    02713
                PRESENT INFORMATION PERTINENT TO THE PURPOSES AND         02713
                ACTIVITIES OF THE MEA AND LOCAL EDUCATION ASSOCIATIONS    02713
*PREREQUISITE   NONE                                                      02713
*EXPERIENCE     SAME AS OBJECTIVES                                        02713
*SETTING        LARGE LECTURE ROOM                                        02713
*MATERIALS      NONE                                                      02713
*LEVEL          ALL GRADES                                                02713
*GENERAL        ALL CANDIDATES                                            02713
*HOURS          ONE AND ONE HALF HOURS                                    02713
*EVALUATION     TRAINEE'S PRESENCE                                        02713
*FILE           CAREER DECISION, MEA                                      02713

*OBJECTIVES     THE TRAINEE WILL HELP DESCRIBE A NUMBER OF KINDS OF       02714
                CONTROLLING BEHAVIOR USED BY PRIMARY TEACHERS             02714
*PREREQUISITE   TRAINEE WILL HAVE OBSERVED TWO PRIMARY GRADE TEACHERS AS  02714
                THEY TEACH                                                02714
*EXPERIENCE     THE TRAINEE WILL PARTICIPATE IN A SMALL GROUP DISCUSSION  02714
                SESSION WITH THE INSTRUCTOR.  GROUP GOAL IS TO INDICATE   02714
                AND DESCRIBE WITHIN TIME LIMIT AS MANY TYPES OF PUPIL     02714
                CONTROLLING BEHAVIOR USED BY THE PRIMARY TEACHERS AS THEY 02714
                CAN                                                       02714
*SETTING        SMALL CLASS ROOM                                          02714
*MATERIALS      NOTES TAKEN DURING OBSERVATIONS                           02714
*LEVEL          GRADES K-3                                                02714
*GENERAL        ALL PRIMARY CANDIDATES                                    02714
*HOURS          ONE                                                       02714
*EVALUATION     INSTRUCTOR'S JUDGMENT                                     02714
*FILE           CAREER DECISION, TEACHER BEHAVIOR                         02714
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clarifies and sharpens his perceptions of his career decisions. If necessary he revises them with the assistance of the faculty.

Early in the four year sequence the student will prepare a short career decision paper emphasizing three points, but he may include any information which he considers pertinent to his career decisions. He will describe 1) why he wants to be an elementary teacher, 2) how he feels about teaching, and 3) what effects he would like to have on children. Through small group discussion and a conference with the instructor, the student will further clarify and extent his written ideas.

During one term of the first year, frequent and regular student-faculty meetings are held. During the other two terms of the first year occasional student-faculty contacts occur. Frequent and regular contacts occur during two terms of the second year. Faculty consultation is readily available to students as needed during the third term of the second year and during the last two years.

The Career Decision component normally covers a two year period, but extends over a longer period for some students. As one means of providing a record of continuity in the experiences of the student, his concepts and reactions, and his tentative career decisions, a file is kept for each student. This file is readily available to both the student and the faculty.

Analytical Study of Teaching

Introduction and Rationale

Teaching is a stylized form of human behavior and, as such, subject to study, analysis and change. Recent writings by Flanders, Gage, Maccia and others indicate that teaching can be described and the descriptions can serve as models for pre-clinical study. It does not seem possible at present, or in the future, that a single model will exist for all teachers to pattern themselves after. A multi-dimensional model provides an avenue for deepest insight into the teaching act. If a student of teaching is to formulate a sound repertoire of teaching behaviors he needs an opportunity to explore in depth those behaviors that are found to be appropriate to teachers in given situations. To do less than this is to permit every person to fly by the seat of his pants in hopes that some good and successful practices will evolve. Or, perhaps almost as bad, to permit modeling based upon a single significant other, usually a supervising teacher who may, or may not, be a master teacher in all respects. Therefore, the construction of this phase of a student's preparation would involve: 1) Communication Analysis: provide an opportunity for in-depth analysis of identifiable styles of teaching behavior, 2) Simulation: simulate experience of pupils to provide contrived situations requiring individual choices that otherwise might not be available at this level of preparation, and 3) Micro-Teaching: provide an opportunity for every student to demonstrate, at a minimum level of competency those skills that are considered essential for entrance to pre-internship. This section of the feasibility study outlines the way that a competency-based program of teacher preparation can be developed for students who have begun their Exploration of Teaching, have made tentative commitments to elementary teaching, and are preparing to assume shared responsibility for teaching in a classroom.

Students who have had experiences as teacher aides or tutors, with various responsibilities for working with individuals and groups of children will be in better positions to make the major career decisions necessary for becoming elementary school teachers. Those individuals who make these decisions also will be ready for in-depth analysis of teaching, to become aware of the subtle implications of behaviors that are a necessary part of the repertoire of a master teacher. This study of teaching will develop a framework of professional skills that can be perfected in future experiences.

A framework well suited to BSTEP emerged from the clinical cycle that develops within the program. However, the best interest of students will be served if there is opportunity to examine and analyze a number of other frameworks for modeling purposes. Four models of Communication and Climate Analysis can serve as avenues to examine teaching behavior. These models are 1) Flanders System of Interaction Analysis, 2) Henderson's System of Influence Techniques, 3) Verbal Interaction Category System (VICS), and 4) Classroom Observation Code Digest.

In general, the presentation of concepts relative to teaching will be in large group lecture sessions. Part of the learning required for this material will be programmed with opportunity and incentive for students to work at independent rates. Major requirements in this component will relate to the program sequence and the personnel responsible for presentation of identified concepts and skills. The content will be developed and revised, based on pre-test and post-test data. Such an approach will provide students and faculty with realistic benchmarks for evaluation.

The prime requisite for a continually renewed program is the development of back-up materials to sustain a current repertoire of materials for instruction. Personnel from the public schools also must be involved in the various phases of this program to enhance accurate interpretation of program components.

Communication and Climate Analysis

The analytical approach to teaching through communication and climate analysis is designed to increase the prospective teachers ability to identify and relate the variables involved in teaching. Systematic study of the teaching process and the environment for teaching constitute the two aspects of communication analysis. The content for communication analysis will be drawn from the systems to be incorporated as tools for analysis. The application of these tools will occur in the simulated micro-teaching and practicum experiences of the trainee.

The communication analysis modules will be structured around:

1. Verbal behavior, affective and cognitive
2. Learning climate or environment

Prior to internship and during the second and third year of the trainee's college career, he will receive training in: 1) Flanders' system of interaction analysis and Henderson's Influence Techniques Instrument designed to look at affective behavior; 2) a Modified Verbal Interaction Category System (VICS) designed to incorporate both affective and cognitive behavior; and 3) the Classroom Observation Code Digest used by Cornell, Lindvall and Saupe for studying classroom emotional climate. As the program develops, these tools may be modified or replaced with more effective instruments.

The trainee receives sufficient training in each system to be able to record data from actual or simulated experiences. In the practicum and field experiences which follow, the trainee is required to utilize the various techniques as called for by the supervisory staff. The trainee will utilize such systems in analyzing simulated teaching acts as well as videotapes of his own teaching.

Flanders' technique of interaction analysis is about as simple as can be devised and still provide a significant objective analysis of teaching. He uses ten categories for the classification of teacher and student talk. By recording the verbal communications at three-second intervals over a twenty-minute period of homogeneous activity and plotting the classification on a 10x10 matrix, Flanders' analysis identifies a number of teacher behaviors and the concepts of direct and indirect teacher influence. At this point, the student is not expected to be highly competent in analysis. A guided application of the techniques to a number of videotaped or filmed teaching situations providing contrasts of teaching styles, should assist the prospective teacher in forming concepts on teaching. These should also help him plan his use of authority as a teacher and how he will approach the responsibilities of teaching. In addition, the technique of interaction analysis will increase the power of the prospective teacher in live observation situations and provide a basis for self-evaluation when actually teaching.

Another model will be the one currently under development in the Learning Systems Institute at Michigan State University (Henderson's System of Influence Techniques). Generally this model focuses upon the selection, identification and use of instructional variables. These instructional variables are:

1. Human
    a. Individual students
    b. Groups (students and teachers)
    c. Teacher (self and other)
2. Environment
    a. Space and location
    b. Supplies and equipment
    c. Media
3. Curriculum
    a. Information type
    b. Mental operation
    c. Complexity level

These instructional variables provide a point of focus for students to study teaching both in terms of instructional design and in terms of actual instruction. Those variables that are included in Instructional Design serve as a framework for pre-classroom decisions. Instructional variables are those that a teacher is expected to utilize in making decisions while in the classroom with pupils. Henderson's outline of these includes:

Instructional Design

1. Assessing and specifying status conditions
    a. Human
    b. Environmental
    c. Curricular
2. Selecting and formulating intended changes in learners
    a. Desired out-of-school behaviors
        1) Intellectual
        2) Social-emotional
        3) Physical

Instruction

1. Assessing status conditions: Determining appropriateness of instructional design, revising if necessary
    a. Human
    b. Environmental
    c. Curricular
2. Implementing strategies for producing intended changes, revising if necessary
    a. Human
    b. Environmental
    c. Curricular

- b. In-class analogue
    - 1) Intellectual
    - 2) Social-emotional
    - 3) Physical

3. Selecting and preparing strategies for producing intended changes

    - a. Human
    - b. Environmental
    - c. Curricular

3. Evaluating type, extend and potential causes of changes

    - a. In regard to status changes
    - b. In regard to objectives
    - c. In regard to outcome

The in-puts required for study of teaching, in many instances, will already have been available to the learner in earlier classroom experiences or through the behavioral science studies that have already been completed. This is especially true in the areas relating to Instructional Design. Many of the concepts will have been presented in earlier behavioral science experiences, especially in Human Learning I. Those aspects of instruction already learned by individuals will be results of intuitive learning through experience in classroom work rather than by any specific program design. Students will have opportunities to micro-teach in the demonstration and perfection of the specific skills that are outlined. Any skills demonstrated in micro-teaching, or taught through simulation of classroom experiences, will fit into the in-class instructional model of teaching behavior. This permits a student to focus sharply on specific skills that are to be mastered prior to pre-internship. Throughout initial development of a framework for teaching, a student will learn the behaviors to be demonstrated in micro-teaching and in student teaching. The focus is in the cognitive domain throughout this experience and evaluation will likewise be in this area. The competency of a student entering micro-teaching should be such that he understands and can develop strategies to be employed in teaching.

The Verbal Interaction Category System (VICS), a revised and modified form of Flanders' instrument, is designed to focus upon the kinds of questions teachers ask and the responses of the pupils. The four categories of questions are based upon Guilford's model of the intellect (cognitive memory, convergent, divergent, evaluative). The theory is that the level of questioning used by the teacher calls for an equivalent level of thinking by the pupil in order to answer the question. In brief, it is an attempt to incorporate a cognitive aspect in looking at the teacher's verbal behavior in the classroom.

The modules already developed are filed in the Information Retrieval System under the following accession numbers. Other modules required for actual training in the system will be developed.

Flanders'	Henderson's	VICS	Cornell
02626	02629	02650	02642
02627	02630	02679	02643
02628	02631		
	02632		
	02633		

Simulation Experiences

To provide prospective elementary teachers opportunities to engage in decision making and problem solving in the areas of teaching and teaching strategies, simulation experiences are provided at various levels of preparation. Such experiences also provide meaningful background for the analytical study of teaching earlier in the college sequence. It is believed that in this way the entire spectrum of the classroom teacher's approach to instruction can be recognized, that the various areas of methods instruction, psychology and its application, and pre-internship can be united in a substantive and cohesive whole.

In agreement with the work of Maccia, simulation experiences support an inquiry-oriented teacher education program. If teacher trainees are to acquire theory that can be related to practice they must learn from experiences which allow for theory construction. These experiences take the form of clinical or laboratory experiences which are controlled and simulated to ensure exposure to all phases of the teaching act and profession.

The simulation experiences have as their major purposes:

1. To develop teachers who are sensitive to total context in which a teacher works and the role which he plays in the classroom

2. To familiarize prospective teachers with various teaching styles and strategies

3. To help prospective teachers determine the degrees of influences of the community and family background on the behavior of children

4. To help prospective teachers become environment conscious in relation to its effect on children and learning

5. To develop teachers who are perceptive in identifying and analyzing the teaching act and are action oriented in regard to instructional and behavioral problems

Simulation is a technique which introduces the teacher to the realities of the classroom in a controlled fashion and allows him to practice specific behaviors in a variety of realistic situations. Simulation activities also are intended to enhance sensitivity to the needs of the pupils, to the environment, and social factors affecting the school and its functions. A simulated classroom setting provides opportunities to study teaching behavior, curriculum, community, relationships, values, and individuals.

Simulation activities are of two kinds:

1. Directed, in which a classroom instructor directs the activity using audio-visual technology or role playing and conducts the preliminary and follow-up discussion

2. Self-directed (Programmed), in which the student either by himself or with a partner, follows procedures outlined in a booklet and with the use of a film clip or classroom simulator, solves problems presented in a programmed sequence

The Teaching Problems Laboratory by Cruickshank and Broadbent employs media to simulate a teaching environment. The laboratory experiences are designed for participants to 1) assume the role of a new teacher, 2) have access to and use of related, appropriate information, 3) solve critical problems of beginning teachers, 4) have exposure to a variety of potential solutions to particular problems and 5) consider possible consequences of their problem-solving behavior. Teaching Problems Laboratory also has been developed for the inner city. This program is a directed type of simulation and requires close supervision and an instructional leader.

The Teaching Research Laboratory at Monmouth, Oregon, under the leadership of Bert Kersch, has produced prototype, low cost simulated programs dealing directly with classroom management. In general, these materials are designed to assist students in identification of the various roles a teacher plays in the classroom. These roles include: instructor, therapist, and group manager. This self-directed type of simulated material is designed to help students become more effective in tasks related to management. Two phases are involved, one teaches certain principles of classroom management; the other applies these principles in various simulated classroom situations.

The Oregon Teaching Laboratory materials already have been piloted and are currently undergoing revision for general utilization in teacher education programs.

A third simulation package has been developed under auspices of two divisions of the School of Education at Indiana University, the Center for Innovation in Teacher Education and the Division of Educational Media. This package of simulation materials includes films, slides, audio-tapes, and printed matter and is designed for use with neophyte elementary school teachers at the student or beginning teacher stages. After participating in this program, the learner should be a more effective problem solver, human relater, and professional Objectives of the simulated package may be viewed from either an affective or a cognitive domain vantage point.

The Affective Domain

As a necessary condition for achieving other objectives, the learner must be aware of, and involved in, the schools and community being studied. This developing awareness of and sensitivity to the broad perspective in which teachers and pupils work will serve as a backdrop for the primary cognitive objectives.

The Cognitive Domain

1. The student will learn to make more effective decisions and to identify the salient characteristics (components or elements) related to decision making.

2. He will discern the values operating in various situations

    a. of a human relations nature (principles)

    b. of a professional nature (principles)

In effect, the objectives in the affective domain serve as a type of readiness for dealing with critical incidents.

The package includes simulated materials of two major types. The first cluster of materials, a slide-tape set plus printed matter, provides the broad context of general community in which Rose Brady, the neophyte teacher, begins her professional career. Background materials relating to the Thompson Elementary School, a hundred-year-old inner city school also are provided. Not only is information provided about the school per se but its sub-community as well. For contrast, similar information regarding The Meadows Elementary School, a modern elementary school plant located in the more affluent part of the community, also is available. A last subset of materials relates to information about the individual pupils in Mrs. Brady's sixth grade class at Thompson School.

Another cluster of simulated materials relate to critical incidents and episodes involving Rose Brady; encounters which require decisions on her part. Since the main focus of these materials is upon the human relations dimension of teaching, the encounters involve teacher-pupil relationships, teacher-parent relationships, teacher-administrator relationships, etc. The materials have been designed with three primary purposes in mind: 1) to help teachers develop better decision making capability, 2) to help prospective teachers identify those principles and guidelines that make for effective professional behavior, and, 3) to help teachers identify those principles and guidelines that make for effective human relations.

The modules for simulation are drawn from experiences planned for the trainee, to occur during his second and third year and prior to his internship. Some simulation experiences are designed for a college setting and under the direction of a college instructor; others are designed to be coordinated with practicum experiences. Modules of this nature will be further developed during the developmental phase and during implementation. The modules which follow have already been designed and are filed in the Information Retrieval System under the following accession numbers:

02481	02503	02548	02571	02483
02506	02549	02484	02572	02509
02551	02485	02511	02574	02552
02486	02512	02553	02575	02487
02518	02534	02488	02522	02555
02489	02523	02557	02491	02524
02558	02493	02525	02559	02495
02526	02561	02497	02546	02562
02499	02547	02569	02582	02583
02584	02585	02626	02629	02634
02637	02652	02653	02660	02671
00213	00747			

Micro-teaching

One approach toward analyzing teaching is to look at it in terms of pupil and teacher behaviors. Teachers over long periods of time use certain skills or techniques many times. Skills and behaviors which teachers use often in the classroom can be identified; different training protocols or established procedures and techniques can be developed to produce proficiency in their use. Thus, much of the complex act of teaching can be divided into simpler, more easily acquired skills and techniques. A tally of the kinds of skills, techniques, or activities that a teacher uses in the classroom reveals that some activities or skills are more often used than others. Also, certain behaviors of the teacher tend to act as stimuli which in turn produce certain pupil behaviors.

Research already has indicated some of these teacher behaviors which tend to produce desired pupil behaviors. For example, when teachers reinforce pupils, both verbally and nonverbally, participation in classroom discussions is increased. If teachers wish to get pupils to participate more often in class they should discover what reinforces particular pupils and then act on that information. The more techniques a teacher has at his disposal for reinforcing pupils the better his chances for getting and maintaining good pupil participation.

A training technique instituted at Stanford University for developing specific teaching skills is micro-teaching. The trainees are exposed to variables in classroom teaching while reducing the complexity of the situation. The teacher attempting to develop a new teaching skill is neither confronted with preparing a 45-minute lesson, nor the management of a group. Teaching a small class, usually four students for a short period of time (five to twenty minutes), allows the teacher trainee to focus his attention on mastering a specific technique.

What are the most important ideas to be considered in develop-teaching skills through micro-teaching?

Specific Skills of Teaching. All students will perform a dual role in presenting and evaluating various aspects of the teaching act. Attaining competency to demonstrate ability in teaching, a student is given an opportunity to engage in a number of selective activities normally handled by a classroom teacher. Generally, the component skills will be:

1. Stimulus Variation. Psychological experiments have shown that deviations from standard or habitual teacher behavior result in higher pupil attention levels. Teachers should be made aware of attention-producing behavior that they can control. These behaviors include teacher movement, gestures, focusing pupil attention, varying the interaction styles, pausing, and shifting sensory channels.

2. Set Induction. The term set refers to the establishment of cognitive rapport between pupils and teacher to obtain immediate involvement. If the teacher succeeds in creating a positive set, pupil involvement will be enhanced. Prospective teachers receive training in set induction procedures in micro-teaching sessions.

3. Closure. Closure is reached when the major purposes or portions of a lesson are judged to have been learned by the student.

4. Silent and non-verbal cues. The technique of using silent or non-verbal cues such as gesturing, eliciting a look, etc., is a powerful tool in the classroom. Silence, after posing a question, pressures the pupils to think before answering.

5. Reinforcement of pupil participation. The acquisition of specific techniques of reward and punishment as reinforcement and the development of skill in using them appropriately is most important to a beginning teacher.

6. Fluency in asking questions. Too often beginning teachers lecture and tell pupils rather than asking questions which elicit the answers from the pupils themselves. Practice in micro-teaching situations should increase the skill of asking questions in working with children in various curricular areas.

7. Probing questions: Probing questions are those that require pupils to go beyond superficial "first answers." These questions usually require more information from the pupils, justification or rationale for original answers, clarification, or focuses upon answers by the whole class.

8. Higher Order questions: Higher Order questions are defined as questions which cannot be answered from memory or recall. They call for a higher level of thinking, a creative non-predictable response. Categories of questioning such as evaluative and divergent are considered to be higher order questions.

9. Divergent questions. These elicit pupil participation in the same manner as probing and higher order questions.

10. Recognizing attending behavior. Through video-tape playback of micro-teaching situations, supervisors are able to sensitize teachers to visual cues of pupils' attending and non-attending behavior such as facial expressions, directions of the eyes, tilts of the heads, and bodily postures. The prospective teacher must become sensitive to indications of interest or boredom, comprehension or bewilderment.

11. Illustrating and using examples. The use of examples is basic to good teaching and necessary to clarify, verify, or substantiate concepts. Both inductive and deductive uses of examples are encouraged in micro-teaching sessions.

12. Lecturing. The purpose of this skill is to clarify and reinforce major ideas, key words, ideas, and concepts in a lecture or discussion. Improper use of this skill causes confusion among pupils being taught.

13. Planned repetition. The use of redundance and repetition is a technique in focusing and highlighting important points, and describing them from different points of view.

14. Completeness of Communication. Sensitivity training on the importance, and the difficulty, of being understood is the purpose of this skill. Development of the skill of communicating with others is most important to a prospective teacher.[3]

All students are expected to perform each of the 14 identified tasks at a minimum level of competency prior to entrance to pre-internship. However, the identification of 14 specific areas does not indicate that they are mutually exclusive; a student must be capable of demonstrating more than one competency skill in a given teaching assignment. The responsibility for identification and evaluation of demonstrated ability is a joint responsibility of an individual, peers and a clinical evaluator. These 14 areas would form the initial beginning place in BSTEP; however, as the program develops and correlates of effectiveness are identified, these would likely be altered.

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[3] Dwight Allen and Kevin Ryan, Micro-teaching. (Reading, Mass.: Addison-Wesley Publishing Co. Inc., 1969)

Teach-Reteach Concept. One of the main advantages of micro-teaching is its provision for reteaching the same lesson almost immediately in an attempt to improve one's performance. Because the lessons are of short duration and are taught to few students, a lesson can be re-taught to a different group of students, incorporating supervisory suggestions for improvement. The basic model follows a cycle of Teach, Critique, Reteach, and Critique. This model employs cybernetic principles of immediate feedback and opportunity to incorporate that feedback immediately into the teaching act.

Video-Tape Recordings. The use of video-tape is not an essential part of micro-teaching, but is a most beneficial addition. There are two major uses for video-tape recordings in developing specific teaching skills for micro-teaching. First, video-tapes are used to show model teachers demonstrating specific skills. An experiment at Stanford University demonstrated the power of closed circuit TV recordings of model teachers obtaining desired behavior change on the part of the trainees.[4] Opportunities to compare their performances with that of a model teacher's enable trainees to adapt their performances to better demonstrate the specific skill.

Second, video-tapes are used in the supervisory process. Behavior change is easier to obtain if the supervisor and the trainee agree on the nature of the trainee's behavior in the first place. The video-tape recording enables them to reach agreement with a common frame of reference. The lesson is recreated on the TV monitor instead of in their individual minds.

Another advantage of video-tape recordings is that they help the trainee to supervise himself, and to analyze his own performance in terms of his strengths and weaknesses. A trainee is encouraged to diagnose his own difficulties and plan alternative actions. On these occasions the supervisor usually is not present during the lesson. The trainee writes out his aims and how he intends to accomplish them before the lesson. After reviewing the video-tape of the lesson, he states how successful he thought the lesson was, using positive and negative examples. He also states what changes he intends to make for the reteach lesson. Following the reteach and second critique session he states how effective he thought the changes were.

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[4] M. Orme, F. J. McDonald, and D. W. Allen, The Effects of Modeling and Feedback Variables on the Acquisition of Complex Teaching Strategy, (Stanford, Calif.: School of Education, Stanford University, 1966).

The trainee meets with his supervisor to view the lessons again and compare his written analysis with that of his supervisor. In this manner the trainee can learn to diagnose his own strengths and weaknesses. This self-analysis is important if a trainee is to continue to develop professionally after his initial training period.

Modules, already prepared and to be prepared, call for specific acts of teaching to be accomplished by the trainee working with small groups of children, similar to the work of Allen. Modules already prepared are filed in the Information Retrieval System under the following accession numbers:

02482
02492
02494
02496
02498
02499
02501
02503
02515
02517
02519
02521
02527
02528
02529
02530
02531
02564

Pre-internship and Internship

Introduction and Rationale

A time-honored, and generally approved feature of any teacher education program is the application experiences. These typically have been required in a school setting and any divergent strategy has been admittedly a substitute. The quality of these substitutes, ranging from role-playing through stimulation and microteaching, has been valued in relation to their proximity to reality.

A second highly valued feature of some teacher preparation programs has been a prolonged period of intern teaching under careful evaluative supervision. The quality of this experience varies considerably among programs. Any internship is controlled by the structure, breadth, and variability of both required and opportune experiences, and their evaluation. However, all such experience-based involving experiences also have been based on a time criterion. That is, student teaching and internship requirements regularly have been set for specific time durations. Such time dimensions are often convenient and appear essential for purposes of administration and conformance to general programs that operate within fixed time dimensions. Education at all levels is typical of such fixed time operations.

The clinical aspect of BSTEP, as a major variance from most preparation programs, is a performance-based experience rather than a time-based experience. When time is used it stands only as an estimate of duration to permit adequate experience and evaluation. Operating within the structure and stricture of established institutions, some time dimension is unavoidable at least at initiation of any experimental program.

The rationale for the clinical features of BSTEP are both explicitly and implicitly stated through the three volumes of the original report (see particularly Volume I, Sections II and III), but a few of the pertinent phrases are recounted and interrelated here to clarify the varieties of clinical experiences scheduled.

This program seeks the development of "a new kind of elementary school teacher...one who is liberally educated and who...engages in teaching as a clinical practice...is an effective student of human learning, of society and its environmental characteristics, and who assumes a role as a responsible agent of social change." Unique experiences are provided to participants in this proposed program, not the least of which are performance-based requirements and an attempt to place such requirements in behavioral terms. These features are an integral part of the clinical experiences themselves, are extensively and definitively specified and vary from the experience feature of traditional teacher prepatation programs. For example,

> Three distinct elements characterize every clinical experience: 1) client related, whether actual or simulated experience with pupils, 2) the trainee is responsible for manipulation of one or more instructional variables in each experience, and 3) the trainee employs feedback to evaluate and improve the effectiveness of his service.

Furthermore, the application of scientific methods in the clinical experiences, as "clinical behavior style", are specified in three elements consisting of paired phases: reflecting (describing and analyzing), proposing (hypothesizing and prescribing), and doing (treating and observing consequences). What is being attempted then in this program is a prescriptive, rather than descriptive, definition of teaching, developing a prescription that reflects the methods of the behavioral sciences. A diagram illustrating this process is found on page 8.

If intent to teach is presumed to be an essential feature of the act of teaching, then competence in teaching is primarily effective transmission of knowledge. Of course, effective transmission of knowledge also presumes both possession of knowledge to transmit and utilization of means of transmission. Effective teachers must have both content knowledge and instructional skills. The quality dimension of teaching then is measured by a teacher's intent, accuracy and facility in selecting and transmitting, and by evaluating both the content and its transmission.

Another means of describing the teaching act is in recycling dimensions: selecting content and method, presenting content systematically and effectively, and evaluating both acquisition of knowledge and methods of presentation. It is within the dimensions of observing, experiencing, and performing that one has the opportunities for reflection, proposition, and action in the clinical behavior style. These dimensions of teacher preparation can be depicted in Figure 3:4.

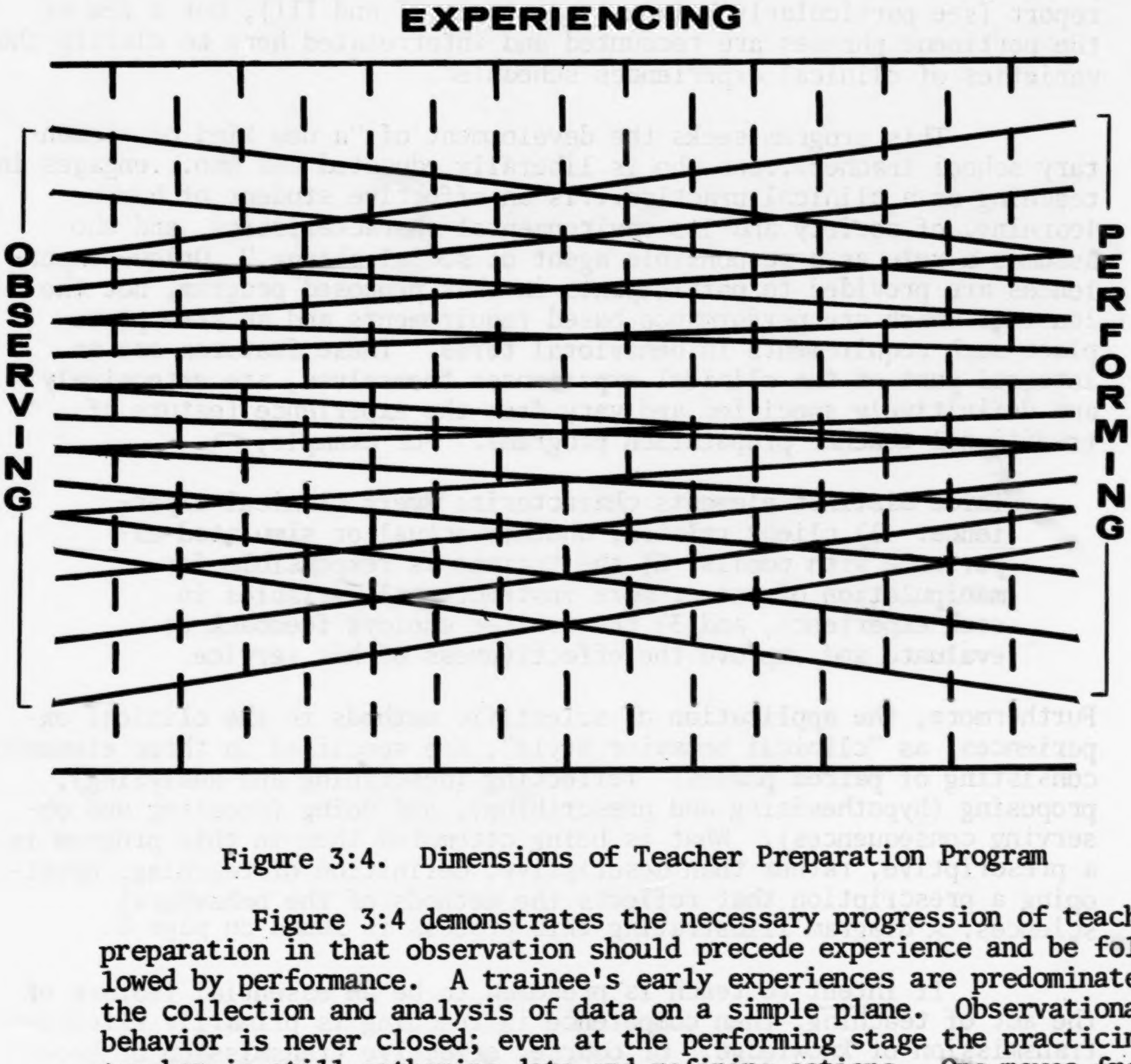

Figure 3:4. Dimensions of Teacher Preparation Program

Figure 3:4 demonstrates the necessary progression of teacher preparation in that observation should precede experience and be followed by performance. A trainee's early experiences are predominately the collection and analysis of data on a simple plane. Observational behavior is never closed; even at the performing stage the practicing teacher is still gathering data and refining actions. One moves from the primarily passive roles of the observing dimension into more active experiences eventuating in roles of the performing dimension. As the variables of instruction are actively experienced, the trainee continues to observe, collect and analyze data but on a much more complex level. No dimension is complete in itself and variability resides in the participant. That is, trainees not only bring variable experiences and skills to each dimension, but achieve performance levels at different rates. The model is intended only to depict the predominate nature of learning activities as a trainee progresses.

The Clinic-School

The clinical experiences consist of two types, simulated and field. Simulated experiences have been described in the BSTEP Final Report as the "clearly defined and precisely controlled presentation of problems." These simulated experiences may occur either in the college or community setting other than the college.

It is apparent both types of clinical experiences must have an established and prepared setting. This is described in the BSTEP Report as the Clinic-School Network (Volume I, Section III, pp. 169-174). Some type of cooperative arrangement of a contractual nature must be established with school districts in the geographic area of the teacher preparation institution. Not only must this network reflect the reality of educational systems and the current society, but must involve staff from the teacher preparation institution and the school district in decision-making regarding the on-going program. Further, materials development and data collection for theoretical and experimental application of research must be part of these clinic-schools.

Staff in an individual clinic-school would include the building administrator, intern consultants, interns, and supervising teachers to serve the primary function of competently teaching actual pupils. Also, service would be provided in the visiting practicum and teamed field experiences of the pre-internship phase, the internship phase itself, and the research formulation and application phase of the clinic-school. One arrangement for clinic-school and university staff interaction in a school of 600 pupils could be as diagrammed in Figure 3:5.

For administrative purposes at inception, the members of this staff would be assigned for an academic year, with the exception of pre-interns assigned for shorter periods of varying duration. The pre-interns would vary in number, based on experience needed and success levels of data collection, experience, or performance of pre-interns.

The ten regular staff teachers in the school would provide the primary stations for pre-internship in Visiting Practicum and Teamed Field Experiences but their roles would be predominantly demonstrative. Specific trainees would be assigned to specific Intern Consultants who would coordinate the team efforts of the assigned interns and regular faculty in accordance with the curriculum program of the particular elementary school. Obviously, technical and electronic devices are essential to providing adequate observation, simulation, and micro-teaching facilities. Special resource people from the school district and the teacher preparation institution would serve the clinic-school(s). Special resources would include personnel in instructional and media resources, curriculum, curriculum supervision, research, professional organizations, and community agencies.

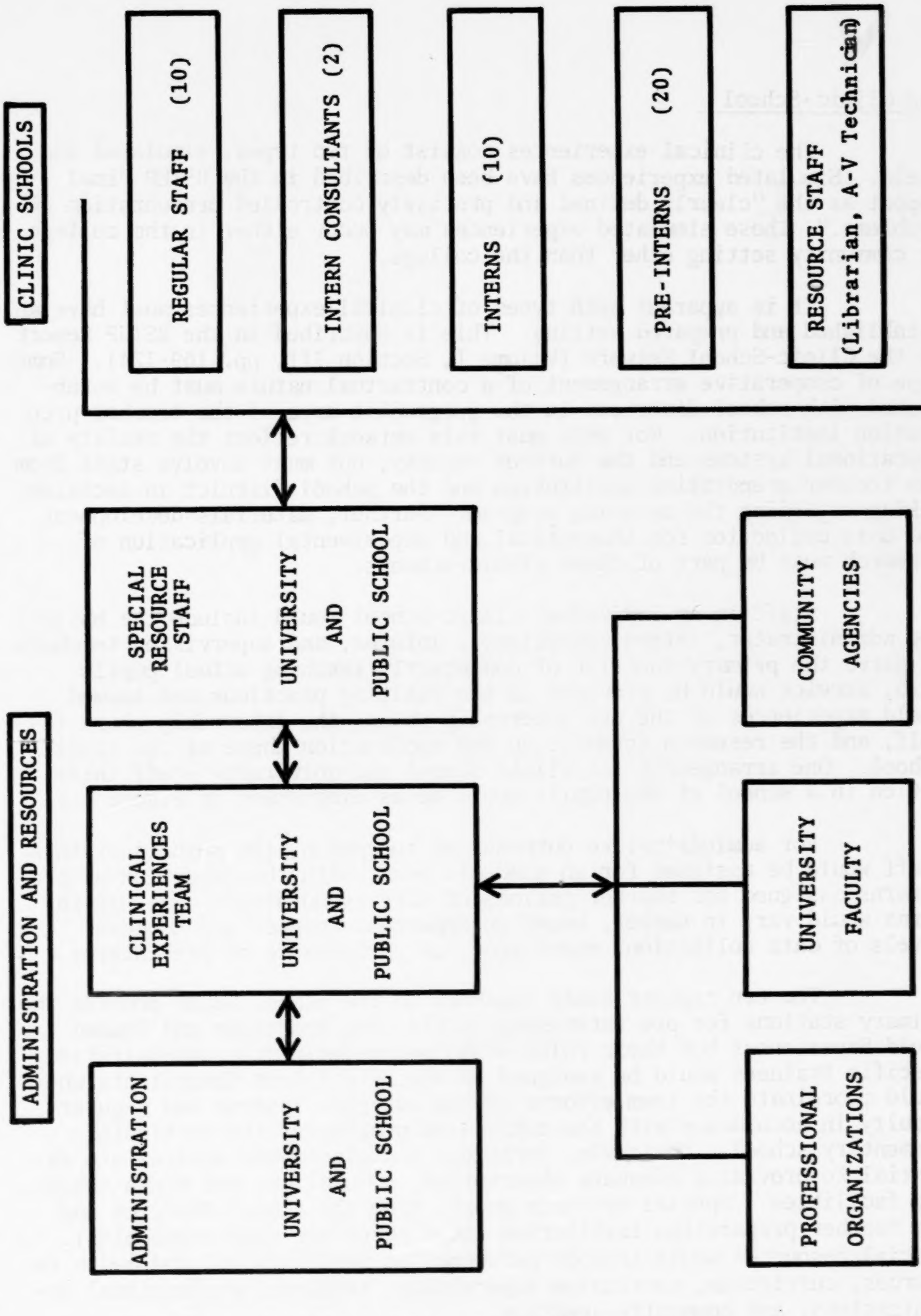
ADMINISTRATION AND RESOURCES
ADMINISTRATION
UNIVERSITY
AND
PUBLIC SCHOOL
CLINICAL EXPERIENCES TEAM
UNIVERSITY
AND
PUBLIC SCHOOL
SPECIAL RESOURCE STAFF
UNIVERSITY
AND
PUBLIC SCHOOL
CLINIC SCHOOLS
REGULAR STAFF (10)
INTERN CONSULTANTS (2)
INTERNS (10)
PRE-INTERNS (20)
RESOURCE STAFF
(Librarian, A-V Technician)
PROFESSIONAL ORGANIZATIONS
UNIVERSITY FACULTY
COMMUNITY AGENCIES

Figure 3:5 Clinic-School--University Interaction

Pre-Internship Experiences

The Pre-Internship area of Clinical Experiences is concerned with field and clinical experiences which occur in the schools just prior to Internship. These experiences are divided into two general categories: visiting practicum, and teamed field experiences. According to their needs, all students engage in some of each, but the longer teamed experiences are reserved for those who show particular needs for field experience to prepare them for internship.

Visiting Practicum. The primary goals of the Visiting Practicum are to communicate to and engage the trainees in specific teaching techniques and strategies and also to help them develop a rationale for teaching. Future teachers need to conceptualize a rationale for using specific teaching behaviors. Such conceptualization may require modification of one's philosophy in order to facilitate changes in teaching behavior. The real school setting offers a climate for problem-solving. Instructional models are provided to help trainees become aware of specific teaching acts, behaviors, and techniques. In addition, they are given opportunities to practice these acts, behaviors, and techniques in an environment which provides feedback and encourages optimal professional growth. This is accomplished through micro-teaching situations as well as whole class settings.

As described in the first BSTEP Report (Volume I, Section III, pp. 174-175) visiting practicum students are given specific practical training in many areas. For each of these areas exemplary modules already filed in the Information Retrieval System are cited. Further modules will be designed in the program's development and implementation stages. Training is given to:

1. Recognize the importance of planning with reference to human variables (Modules 02482, 02492, 02493, 02494, 02496, 02649)

2. Understand the role of planning the sort of environment which will provide opportunities for children to learn (02519, 02525, 02527)

3. Understand principles of motivating learning (02529, 02531, 02530)

4. Understand various communication modes; types of questions and responses they elicit, expression of feelings, etc. (02628, 02630, 02631, 02632, 02633, 02635, 02636, 02638, 02639)

5. Understand the distinction between measurement and evaluation (02525, 02515, 02548, 02549)

6. Evaluate the effect of instructional experiences (02505, 02515, 02548, 02549)

7. Evaluate self as teacher (02628, 02631, 02633, 02636, 02639, 02642, 00810, 00811)

8. Understand the need for planning as it relates to instructional resources for achieving immediate learning goals (02505)

9. Understand the importance of record-keeping concerning individual pupil progress (02505)

10. Become familiar with the various methods of reporting progress to parents (To be developed)

11. Understand the individual teacher's role in relationship to all other staff members (02573)

12. Become familiar with procedures for obtaining instructional materials (02531)

13. Become familiar with cumulative records (02567)

14. Recognize factors which relate to planning for physical and socio-psychological climates of learning (02531, 02579)

15. Understand principles of employing instructional materials in instructional setting (02531)

16. Operate basic audio-visual equipment (02528)

17. Recognize importance of pupils experiencing success (02525)

18. Search for causes of behavior within the classroom rather than treating symptoms of causes (02550, 02579)

19. Understand principles of classroom organization for instructional purposes (02579)

20. Understand the importance of variety and change of pace in instruction (To be developed)

21. Recognize the relationship of physical comfort and learning (02519, 02525, 02527)

In order to meet these objectives the student's practicum experiences must deal with the kinds of problems which will confront the pre-intern as he moves toward an increasingly active and responsible role as a teacher. Problems are examined from the point of view of educational psychology as well as the practical application of teaching and learning theory. The student is given opportunities to apply specific techniques of teaching and classroom management in small group situations in micro-teaching.

Directed observation, assigned and supervised by methods instructors, is also an important feature of the visiting practicum. The focus of the observation is no longer general in nature as experiences by the trainee in his previous work. The focus of observation during the visiting practicum becomes direct and specific, and leads to actual practice by the trainee of the teaching activity observed. The trainee observes and practices strategies for teaching and learning which include the content, methods, and materials used in the cooperating classroom.

During the visiting practicum, methods of teaching particular lessons are discussed both prior and subsequent to the actual teaching of the lessons by the trainee. At times the lessons are video-taped and the trainee and cooperating teacher view and analyze the performance.

Teamed Field Experiences

1. During the third year, each trainee is assigned, for a short period of two to three weeks of half-day work with a team of interns and intern consultants.* The trainee, as a pre-intern, arranges all non-BSTEP academic courses for either mornings or afternoons in order to be available for the teamed field experiences as assigned. Participation as part of the team in a clinic-school provides a continuous experience in planning and evaluating. The intern consultant helps the trainee prepare to carry on limited but continuous teaching responsibility during this period and assesses the trainee's readiness for internship. If it is judged that the trainee is not yet ready for internship, the teamed field experience is extended into as many more weeks as necessary. Reassignment to another team is also a possibility.

2. A principal departure from the traditional student teaching experience is the assignment of students as members of teaching teams in elementary schools. A team consists of:

a. An intern consultant

b. Intern teachers or experienced teachers

c. Pre-interns

This team functions as a unit in providing instruction in elementary classrooms. The joint involvement of trainees and intern consultants assists the intern teachers or experiences teachers in their teaching, while providing a realistic and guided experience for the trainees still in their teacher preparation program. In addition, trainees have opportunities to view the teaching process from a broad base.

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*The intern consultant is a highly-skilled experienced teacher selected from an elementary school to work full time with pre-interns and interns.

They are able to teach in more than one classroom and at more than one grade level; they can become acquainted with the organization of schools and the functions of various school personnel; they can analyze the performances of other team members and receive assistance from senior team members.

One or more instructional associates may also be members of the team. Their preparation is described in the first BSTEP Report (Volume III, Section VIII).

Writing specific experience modules for teamed field experiences is a special problem. Most clinical experience modules presented earlier depend upon a high degree of predictibility and replicability being assured through the use of structured tasks in hypothetical situations. By contrast, the field experiences in teaching are random and often unpredictable. Very little can be done to guarantee that any particular confrontation will occur during a fixed period of time. The best that can be suggested is that field assignments be made in terms of the probabilities that certain problems are more likely to occur in one situation than in another. The major argument for assignment to practicum and internship experiences within "difficult" schools and neighborhoods is that in them the trainee is more likely to encounter the really demanding situations which, for humanitarian and pedagogical reasons, should be first confronted under supportive supervision. The field experience modules which follow are not intended to represent the entirety of the random encounters of the proposed field assignments; they do represent highlights and problematic encounters.

Modules, already prepared, are filed in the Information Retrieval System under the following accession numbers. Future modules will be designed and added during the development phase and during implementation.

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Internship

The final segment of the clinical section is the Internship.

This segment is currently scheduled for each trainee in a single teaching station for a full academic year. For the first time the trainee will have total responsibility for the on-going program in a regular classroom throughout the school year. However, continuing preparation focuses on a variety of needs in knowledge and skills ranging from simple to complex. Interns are expected to progress at different rates through what might be called "concern stages" in their teaching experience. Such rates, and in fact specific concern stages, are attributable to a variety of variables, such as personal needs, class makeup, cultural setting, adequate background, and content and methodological skills.

Since interns must work within the curriculum design of the districts and schools with which the teacher education institution cooperates, it would be presumptuous for the University alone to specify the experiences of internship. The actual program of intern experiences should be cooperatively planned by the University and cooperating school districts.

From several years of experience in working with interns, however, Michigan State University faculty and intern consultants have identified some concerns that appear to be common to all interns. These concerns can be formulated into a model of "concern stages" to serve as a framework for planning continuing Clinical Experiences for prospective teachers during internship. Such a model is illustrated:

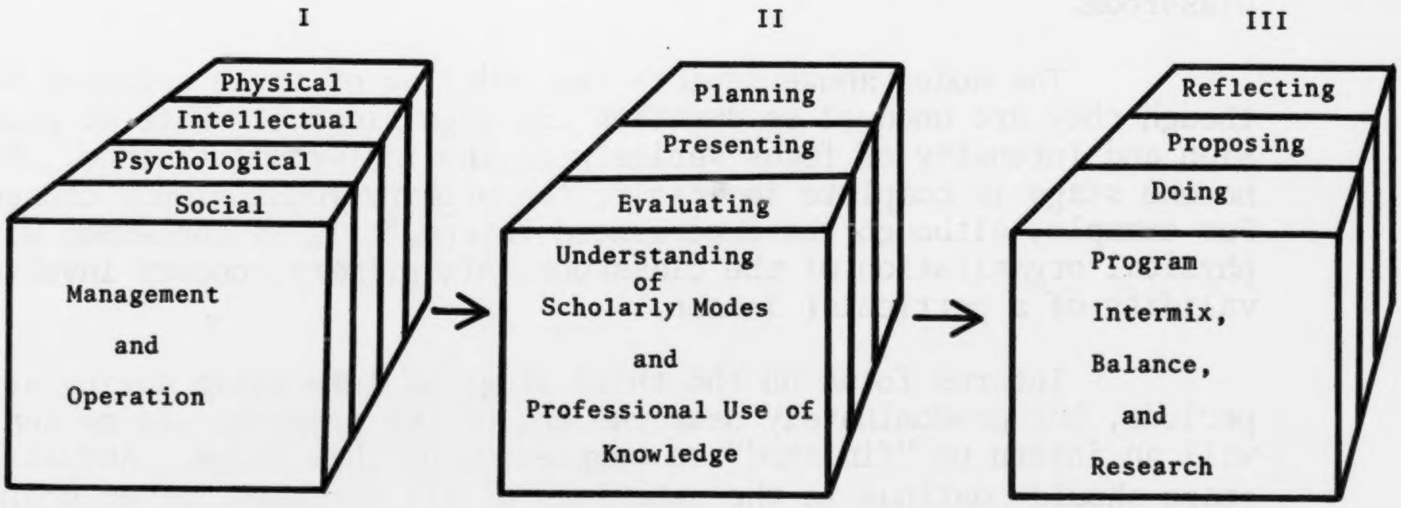
I
Physical
Intellectual
Psychological
Social
Management and Operation
II
Planning
Presenting
Evaluating
Understanding of Scholarly Modes and Professional Use of Knowledge
III
Reflecting
Proposing
Doing
Program Intermix, Balance, and Research

Figure 3:6 Concern Stages During Internship

Obviously the purpose of internship in teacher preparation is to permit a gradual professional growth in levels of performance capability. Trainees will have had a variety of experiences related to each of the illustrated "concern stages" prior to internship. These experiences will have been gradually shifted from observation to performance, from limited and supervised roles with few students to short-term total group responsibility. Analysis of teaching behaviors will have been a constant feature of the over-riding focus of behavioral science.

What trainees will not have experienced is the independent responsibility for a class group over a prolonged period of time. Such responsibility needs to focus on the cyclic clinical behavior style of reflecting, proposing, and doing. This cannot be done now in isolation, with time restrictions and need for constant guidance. Eventually, simple levels of operation, such as management of the classroom, for example, must become so familiar in their basics that decision making becomes rapid. To be sure, actions are still based on the clinical behavior style even if routinized. With varied and lengthy experience one performs some tasks with apparent reflex and routine ease, but actions requiring reflection and decision are all speeded on an experience basis.

Based on Michigan State University's extensive experience with teacher internship in the operation of the Elementary Intern Program (EIP) the beginning intern is typically most concerned with the vocational features of teaching. No matter how much stimulation, role-playing, micro-teaching, or actual independent teaching has occurred prior to assignment as an intern, there may be a psychological difference. The relative independence of internship forces primary concerns with the physical, social, intellectual, and psychological management of the classroom.

The model above depicts the ordering of these concerns although they are unequal in duration and significance. Rate of progression and intensity of focus varies with the individual trainee. Further, no one stage is complete in itself; the primary focus simply changes. For example, although the experienced intern still is concerned with the physical organization of the classroom, his primary concern involves the validity of a particular lesson.

Interns focus on the third stage of internship during several periods, but predominately near the end of the program. In no sense will an intern be "finished" on completion of this stage. Actually this stage should continue in the behaviors of all teachers, never ending with the professional teacher. This third segment concerns problems of curricular balance and variety. The processes of reflecting, proposing, and doing are the predominate on-going strategy. Simple research efforts create, draw attention to, and tentatively resolve questions of curriculum toward which the teacher preparation program has been directed. In effect, the aim is to produce a questioning, analytic teacher who proposes rather than reposes.

The task of the instructional team, but primarily of the intern consultants, in the Internship year is fourfold: 1) to determine the major "concern stages" of the intern, 2) to identify the factors that contribute to that concern, 3) to provide the intern with the means for identifying and resolving the salient issues of the concern, 4) to assist in evaluating results of resolution efforts and developing new resolutions. Intern consultants, then, apply clinical behavior style themselves as models for teacher behavior. The instructional task with interns is a continuation of pre-internship type experience, and may require recycling of previous learning modules as necessary.

A series of objectives for each of the three "concern stages" will guide both intern and intern consultant. Each objective has a first level origin in general terms with steady refinement toward specificity, in behavioral terms, of a designed module. This permits an overall instructional structure within the primary curriculum of the clinic-school, meeting the prime requisite of an adequate on-going instructional program for pupils in the school.

The general to specific objectives are developed and refined during pre-testing and testing periods of this program. Many learning modules in this program for use prior to internship, particularly those of an application nature with children, also are suitable for replication during internship. Levels of performance expectation can be tested, as can balance, timing, and blending. A sample array of general objectives for each of the concern stages is stated below as questions, with references to exemplary modules already filed in the Information Retrieval System. Additional modules which have been developed for each of the major concern stages are also included.

Management and operation (02683)

1. What are minimal, standard, and ideal physical settings for a variety of teaching circumstances?

2. What are the effects of environmental setting on learning?

3. In what ways can materials be efficiently handled in the classroom?

4. What types of social groupings can one expect and encourage?

5. What basic emotional and physical needs can interfere with or enhance the teaching-learning circumstance?

6. When and how does one evaluate academic and intellectual expectations?

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*OBJECTIVES    ARRANGE AND MAINTAIN AN ATTRACTIVE ROOM FROM THE FIRST DAY02715 01
*PREREQUISITE KNOWLEDGE AND TASTE IN COLOR COMBINATIONS, FORM, AND      02715 02
               DESIGN (ART COURSE)                                      02715 03
*EXPERIENCE    INFORM CANDIDATES OF THIS EXPECTATION (SEE EVALUATION).  02715 04
               CANDIDATE PREPARES AN ATTRACTIVE AND INTERESTING ROOM    02715 05
               ENVIRONMENT THROUGH THE USE OF DISPLAYS                  02715 06
*SETTING       INDEPENDENT                                              02715 07
*MATERIALS                                                              02715 08
*LEVEL         ALL GRADES                                               02715 09
*GENERAL       ALL CANDIDATES                                           02715 10
*HOURS         2                                                        02715 11
*EVALUATION    COLORFUL DISPLAYS ARE PRESENT AND STUDENTS DISPLAY       02715 12
               INTEREST IN ROOM ENVIRONMENT                             02715 13
*FILE          INTERNSHIP, ENVIRONMENT                                  02715 14


*OBJECTIVES    CANDIDATE CAN IDENTIFY, DESCRIBE, AND UTILIZE THE        02716 01
               PROFESSIONAL ROLES AND FUNCTIONS OF VARIOUS SUPPORT      02716 02
               PERSONNEL IN AN ELEMENTARY SCHOOL SETTING, E.G. NURSE,   02716 03
               SPEECH THERAPIST, DIAGNOSTICIAN, PSYCHOLOGIST, ETC.      02716 04
*PREREQUISITE KNOWLEDGE OF AVAILABILITY OF PROFESSIONAL SUPPORT         02716 05
               PERSONNEL IN EDUCATION                                   02716 06
*EXPERIENCE    CANDIDATE STUDIES THE DESCRIPTIONS, FUNCTIONS, AND       02716 07
               PROCEDURES OF SUPPORT PERSONNEL (NURSE, COUNSELOR, SPEECH 02716 08
               THERAPIST, HOME-TEACHER, DIAGNOSTICIAN, PSYCHOLOGIST,    02716 09
               SOCIAL WORKER, ETC.) IN AN ELEMENTARY EDUCATIONAL SETTING.02716 10
               CANDIDATE ASSIGNS SAMPLE CASE SITUATIONS TO SUPPORT      02716 11
               PERSONNEL                                                02716 12
*SETTING       INDEPENDENT                                              02716 13
*MATERIALS     FILE OF JOB DESCRIPTIONS, FUNCTIONS, AND PROCEDURES OF   02716 14
               SUPPORT PERSONNEL IN AN ELEMENTARY SCHOOL SETTING        02716 15
*LEVEL         ALL GRADES                                               02716 16
*GENERAL       ALL CANDIDATES                                           02716 17
*HOURS         2                                                        02716 18
*EVALUATION    CANDIDATE CAN DEFINE AND DESCRIBE THE ROLES, FUNCTIONS,  02716 19
               AND PROCEDURES OF SUPPORT PERSONNEL.  CANDIDATE ASSIGNS, 02716 20
               AND CAN JUSTIFY ASSIGNMENT OF, SAMPLE CASE SITUATIONS TO 02716 21
               SUPPORT PERSONNEL                                        02716 22
*FILE          INTERNSHIP, NON-ACADEMIC PERSONNEL                       02716 23


*OBJECTIVES    FAMILIARIZE CANDIDATE WITH TYPICAL DATA INCLUDED,        02717 01
               TERMINOLOGY, SIGNIFICANCE OF DATA, AND USE OF CUMULATIVE 02717 02
               RECORDS OF ELEMENTARY PUPILS.  PROVIDE PRACTICE IN DATA  02717 03
               INTERPRETATION AND CLASSIFICATION                        02717 04
*PREREQUISITE KNOWLEDGE OF ELEMENTARY DATA COLLECTION PROCEDURES AND    02717 05
               TERMINOLOGY RELATED TO ELEMENTARY EDUCATION              02717 06
               (HUMAN LEARNING)                                         02717 07
*EXPERIENCE    CANDIDATE GAINS KNOWLEDGE (HEARS, READS, ETC.) OF        02717 08
               CUMULATIVE STUDENT RECORDS -- DATA INCLUDED, FORMAT,     02717 09
               SIGNIFICANCE, USE.  CANDIDATE READS SAMPLE STUDENT       02717 10
               CUMULATIVE RECORDS AND IDENTIFIES FEATURES OR RECORDS THAT02717 11
               REVEAL PARTICULAR CATEGORIZATIONS OF PROBLEMS OR PROSPECTS02717 12
               (PHYSIOLOGICAL, PSYCHOLOGICAL, INTELLECTUAL, EXPERIENTIAL)02717 13
               AND/OR PATTERNS OF BEHAVIOR                              02717 14
*SETTING       INDEPENDENT                                              02717 15
*MATERIALS     SETS OF SAMPLE CUMULATIVE RECORDS DELIBERATELY DESIGNED TO02717 16
               MEET SET CLASSIFICATIONS                                 02717 17
*LEVEL         ALL GRADES                                               02717 18
*GENERAL       ALL CANDIDATES                                           02717 19
*HOURS         3                                                        02717 20
*EVALUATION    CANDIDATE ABLE TO CITE FEATURES OF, SIGNIFICANCE, AND USE 02717 21
               OF CUMULATIVE RECORD DATA.  CANDIDATE CAN CATEGORIZE     02717 22
               WITHIN PREDETERMINED CLASSES, AND JUSTIFY SUCH           02717 23
               CATEGORIZATION, OF SAMPLE CUMULATIVE RECORDS WITH 80 0/0 02717 24
               ACCURACY                                                 02717 25
*FILE          INTERNSHIP, RECORDS                                      02717 26
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*OBJECTIVES     PROVIDE EXPERIENCE IN APPLYING. IN A PROGRAM OF ACTION.    02718 01
                THE RESULTS OF DATA INTERPRETATION AND CLASSIFICATION FROM02718 02
                STUDENT CUMULATIVE RECORDS                                 02718 03
*PREREQUISITE   PRACTICE IN DATA INTERPRETATION AND CLASSIFICATION BASED   02718 04
                ON STUDENT CUMULATIVE RECORDS (MODULE PAGE IV C 1)         02718 05
*EXPERIENCE     CANDIDATE PREPARES AN ADVISORY REPORT OF INSTRUCTIONAL OR  02718 06
                REMEDIAL RECOMMENDATIONS FOR AN ELEMENTARY PUPIL ON THE    02718 07
                BASIS OF EVALUATION OF DATA IN A SAMPLE CUMULATIVE RECORD  02718 08
*SETTING        SMALL GROUP                                                02718 09
*MATERIALS      SAMPLE CUMULATIVE RECORDS                                  02718 10
*LEVEL          ALL GRADES                                                 02718 11
*GENERAL        ALL CANDIDATES                                             02718 12
*HOURS          2                                                          02718 13
*EVALUATION     RECOMMENDATIONS MEET THE APPROVAL OF A PANEL OF THREE      02718 14
                FELLOW STUDENTS.  EVALUATION BASED ON DEMONSTRABLE         02718 15
                RELATIONSHIP BETWEEN DATA AND RECOMMENDATIONS              02718 16
*FILE           INTERNSHIP. RECORDS                                        02718 17
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*OBJECTIVES     CANDIDATE DEMONSTRATES RECOGNITION AND UNDERSTANDING OF    02719 01
                OWN REACTIONS TO PERSONALLY DIRECTED NEGATIVE EMOTIONS     02719 02
*PREREQUISITE   CANDIDATE HAS EXPERIENCE OF NEGATIVE EMOTIONAL REACTIONS   02719 03
                TO TEACHERS BY PUPILS                                      02719 04
*EXPERIENCE     CANDIDATE SEES FILM OR VIDEO TAPE DIRECTING NEGATIVE       02719 05
                EMOTIONS TOWARD VIEWER.  EMOTIONAL REACTIONS OF CANDIDATE  02719 06
                ARE IDENTIFIED AND DISCUSSED  VIDEO TAPE OF CANDIDATE'S    02719 07
                OVERT REACTIONS TO FILM IS USED AS VERIFICATION OR         02719 08
                NEGATION OF VERBALIZED REACTIONS  (REFERENCE9  NORM        02719 09
                KAGEN'S STUDIES IN HUMAN INTERACTION).  STRATEGIES FOR     02719 10
                IDENTIFYING. MEETING. UNDERSTANDING. AND REACTING TO       02719 11
                EMOTIONAL DISPLAYS AND REACTIONS ARE DISCUSSED             02719 12
*SETTING        INDEPENDENT                                                02719 13
*MATERIALS      FILMS OR TAPES OF PERSONALLY DIRECTED NEGATIVE EMOTIONS.   02719 14
                VIDEO TAPES AND VIEWER                                     02719 15
*LEVEL          ALL GRADES                                                 02719 16
*GENERAL        ALL CANDIDATES                                             02719 17
*HOURS          2                                                          02719 18
*EVALUATION     CANDIDATE CAN VERBALIZE OWN EMOTIONAL REACTIONS TO A       02719 19
                PERSONALLY DIRECTED DISPLAY OF NEGATIVE EMOTIONS.          02719 20
                VERBALIZATION CORRESPONDS WITH VIDEO TAPE OF REACTIONS.    02719 21
                STRATEGIES FOR HANDLING EMOTIONAL DISPLAYS AND REACTIONS   02719 22
                ARE INITIATED                                              02719 23
*FILE           INTERNSHIP. TEACHER BEHAVIOR                               02719 24
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*OBJECTIVES     CANDIDATE9  1)  CAN LIST TYPICAL AND IDEAL INSTRUCTIONAL   02720 01
                MATERIALS. THEIR USES. UTILITY. AND SOURCES)  2)  CAN LIST02720 02
                FROM OBSERVATION THE PRESENCE. ABSENCE. AND USE OF         02720 03
                INSTRUCTIONAL MATERIALS IN A CLASSROOM                     02720 04
*PREREQUISITE   KNOWS SIGNIFICANCE OF VARIETY AND CONCRETENESS IN          02720 05
                INSTRUCTIONAL PRESENTATIONS                                02720 06
*EXPERIENCE     CANDIDATE9  1)  CAN REFLECT KNOWLEDGE OF INSTRUCTIONAL     02720 07
                MATERIALS--SOURCES. USES. NEEDS)  2) OBSERVES A CLASSROOM  02720 08
                OPERATION LISTING THE PRESENCE AND USES OF INSTRUCTIONAL   02720 09
                MATERIALS AND TEACHING AIDS                                02720 10
*SETTING        LARGE GROUP                                                02720 11
*MATERIALS                                                                 02720 12
*LEVEL          ALL GRADES                                                 02720 13
*GENERAL        ALL CANDIDATES                                             02720 14
*HOURS          1                                                          02720 15
*EVALUATION     LISTING AND USES OF INSTRUCTIONAL AIDS FROM OBSERVATION    02720 16
                ACCOUNTS FOR 90 0/0 OF THOSE ACTUALLY USED                 02720 17
*FILE           INTERNSHIP. INSTRUCTIONAL MATERIALS                        02720 18
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*OBJECTIVES     TO USE, AND JUSTIFY THE USE OF, A VARIETY OF INSTRUCTIONAL02721 01
                MATERIALS AND TEACHING AIDS                                02721 02
*PREREQUISITE KNOWLEDGE OF NATURE, USE, UTILITY, AND SOURCES OF           02721 03
                INSTRUCTIONAL MATERIALS AND TEACHING AIDS                  02721 04
*EXPERIENCE     CANDIDATE TEACHES A LESSON UTILIZING A VARIETY OF          02721 05
                INSTRUCTIONAL MATERIALS AND AIDS, AND DESCRIBES THEIR      02721 06
                EXTENT AND UTILITY                                         02721 07
*SETTING        INDEPENDENT                                                02721 08
*MATERIALS                                                                 02721 09
*LEVEL          ALL GRADES                                                 02721 10
*GENERAL        ALL CANDIDATES                                             02721 11
*HOURS          1-3                                                        02721 12
*EVALUATION     DEMONSTRATES USE OF AND FAMILIARITY WITH AVAILABLE         02721 13
                INSTRUCTIONAL MATERIALS MEETING CRITERIA OF VARIETY AND    02721 14
                APPLICABILITY WITHIN RESTRICTIONS OF AVAILABILITY          02721 15
*FILE           INTERNSHIP, TEACHING AIDS                                  02721 16


*OBJECTIVES     ABILITY TO ORGANIZE AND PRODUCE THE WRITTEN SUPPORT        02722 01
                DOCUMENTS FOR A WEEKLY PLAN BOOK                           02722 02
*PREREQUISITE KNOWLEDGE OF, OBSERVATION OF SAMPLES, AND NOTES ON USAGE    02722 03
                OF SUPPORT DOCUMENTS REQUIRED FOR WEEKLY PLAN BOOKS        02722 04
*EXPERIENCE     CANDIDATE PREPARES SAMPLE SUPPORT DOCUMENTS* BASED ON DATA02722 05
                FROM OWN CLASS. *1)  SEATING CHART) 2)  LISTS OF CHILDREN 02722 06
                IN SPECIAL RELEASE TIME CLASSES OR SERVICES (MUSIC,        02722 07
                TESTING, SPEECH THERAPY, ETC.))  3)  LISTS OF CHILDREN BY 02722 08
                GROUP ASSIGNMENTS)  4)  CALENDAR OF SPECIAL ACTIVITIES)  502722 09
                ) DAILY SCHEDULE, GENERAL DIRECTIONS AND NOTES FOR         02722 10
                SUBSTITUTE, ETC.                                           02722 11
*SETTING        INDEPENDENT                                                02722 12
*MATERIALS                                                                 02722 13
*LEVEL          ALL GRADES                                                 02722 14
*GENERAL        ALL CANDIDATES                                             02722 15
                                                                           02722 16
*HOURS          3
*EVALUATION     SAMPLE DOCUMENTS ARE COMPLETE, THOROUGH, AND APPARENTLY    02722 17
                EFFECTIVE.  CANDIDATE CAN DEFEND DOCUMENTS  (EFFECTIVE IN 02722 18
                USE)                                                       02722 19
*FILE           INTERNSHIP, WEEKLY PLAN                                    02722 20


*OBJECTIVES     TO BUILD A FOUNDATION FOR WORKING WITH A SPECIFIC GROUP    02723 01
                OR CLASS OVER A PROLONGED PERIOD                           02723 02
*PREREQUISITE KNOWS OF AND CAN USE SIMPLE SOCIOMETRIC DEVICES             02723 03
*EXPERIENCE     CONTRIVED OR REAL RESPONSES TO SOCIOMETRIC DEVICES ARE     02723 04
                MANIPULATED TO PROVIDE JUSTIFICATION FOR THE SELECTION OF 02723 05
                A PARTICULAR INSTRUCTIONAL STRATEGY                        02723 06
                                                                           02723 07
*SETTING        INDEPENDENT
*MATERIALS                                                                 02723 08
*LEVEL          ALL GRADES                                                 02723 09
*GENERAL        ALL CANDIDATES                                             02723 10
*HOURS          1                                                          02723 11
*EVALUATION     SOCIOMETRIC DEVICES ARE ADMINISTERED AND USED TO COLLECT   02723 12
                DATA APPLICABLE TO INSTRUCTIONAL EFFORTS.  EVIDENCED BY    02723 13
                WRITTEN DATA AND ORAL OR WRITTEN JUSTIFICATION             02723 14
*FILE           INTERNSHIP, GROUP RELATIONS, SOCIOMETRIC DEVICES           02723 15
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*OBJECTIVES     TO BUILD A FOUNDATION FOR WORKING WITH A SPECIFIC GROUP    02724 01
                OR CLASS OVER A PROLONGED PERIOD                           02724 02
*PREREQUISITE KNOWS WHAT RECORDS ARE, OR SHOULD BE, TYPICALLY AVAILABLE   02724 03
                ON PUPILS                                                  02724 04
*EXPERIENCE     CANDIDATE READS SAMPLE STUDENT RECORDS AND SELECTS DATA    02724 05
                PERTINENT TO A SPECIFIC INSTRUCTIONAL PLAN                 02724 06
*SETTING        INDEPENDENT                                                02724 07
*MATERIALS                                                                 02724 08
*LEVEL          ALL GRADES                                                 02724 09
*GENERAL        ALL CANDIDATES                                             02724 10
*HOURS          3                                                          02724 11
*EVALUATION     PUPIL RECORDS ARE READ AND PERTINENT DATA CORRELATED WITH  02724 12
                INSTRUCTIONAL EFFORTS AS JUSTIFIED IN WRITING OR ORALLY    02724 13
*FILE           INTERNSHIP, RECORDS                                        02724 14
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*OBJECTIVES    ABILITY TO PREPARE WRITTEN PLANS FOR A DAILY TEACHING       02725 01
               SCHEDULE IN ONE CLASSROOM                                   02725 02
*PREREQUISITE CANDIDATE CAN LIST/IDENTIFY SEGMENTS OF A DAILY TEACHING     02725 03
               SCHEDULE, WRITE OR RECOUNT THE PURPOSES OF SUCH PLANS AND   02725 04
               THEIR COMPONENT PARTS                                       02725 05
*EXPERIENCE    CANDIDATE WRITES SAMPLE PLAN (S) FOR A DAILY TEACHING       02725 06
               SCHEDULE ENCOMPASSING ONE WEEK  PLAN INCLUDES9  1)  TIME    02725 07
               ALLOTMENT FOR EACH SUBJECT OR ACTIVITY IN CONFORMITY TO A)02725 08
               ADMINISTRATIVE REQUIREMENTS, B)  AGE LEVEL NEEDS, C)        02725 09
               BALANCE OF TYPES OF EXPERIENCE, D)  INTEGRATION OF RELATED02725 10
               SUBJECTS) 2)  PROVISION FOR INDIVIDUAL, SMALL GROUP, AND    02725 11
               LARGE GROUP INSTRUCTION) 3)  PROVISION FOR SPECIAL CLASSES02725 12
               (GYM, THERAPY, LIBRARY, ETC.)) 4) PROVISION FOR ROUTINES    02725 13
               AND CHORES (OPENING EXERCISES, ACCOUNTING PROCEDURES,       02725 14
               TRANSITIONS, HOUSEKEEPING, MATERIALS AND EQUIPMENT          02725 15
               PREPARATION, ETC.)                                          02725 16
*SETTING       INDEPENDENT                                                 02725 17
*MATERIALS                                                                 02725 18
*LEVEL         ALL GRADES                                                  02725 19
*GENERAL       ALL CANDIDATES                                              02725 20
*HOURS         2                                                           02725 21
*EVALUATION    SAMPLE PLAN INCLUDES ALL REQUIRED COMPONENTS                02725 22
*FILE          INTERNSHIP, DAILY SCHEDULE                                  02725 23
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*OBJECTIVES    ABILITY TO PREPARE AND USE WRITTEN PLANS FOR A DAILY        02726 01
               TEACHING SCHEDULE IN A CLASSROOM                            02726 02
*PREREQUISITE WRITTEN PLAN INCLUDING REQUIRED SEGMENTS                     02726 03
*EXPERIENCE    CANDIDATE USES PREVIOUSLY WRITTEN DAILY TEACHING SCHEDULE 02726 04
               FOR A ONE WEEK PERIOD OR IN SIMULATION SITUATIONS           02726 05
*SETTING       INDEPENDENT                                                 02726 06
*MATERIALS                                                                 02726 07
*LEVEL         ALL GRADES                                                  02726 08
*GENERAL       ALL CANDIDATES                                              02726 09
*HOURS         18                                                          02726 10
*EVALUATION    OBJECTIVES OF PLAN, ADMINISTRATIVELY AND ACADEMICALLY,      02726 11
               ARE ACCOMPLISHED AS ALL SEGMENTS OF PLAN ARE UTILIZED OR   02726 12
               THEIR OMISSION (MODIFICATION) IS JUSTIFIED                  02726 13
*FILE          INTERNSHIP, WRITTEN PLANS                                   02726 14
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*OBJECTIVES     ABILITY TO PREPARE WRITTEN PLANS OF INSTRUCTION FOR        02727 01
                SPECIFIC UNITS OF STUDY                                    02727 02
*PREREQUISITE   CANDIDATE CAN LIST/IDENTIFY SEGMENTS OF A UNIT PLAN. AND   02727 03
                WRITE OR RECOUNT THE PURPOSES OF SUCH PLANS AND THE        02727 04
                VARIOUS SEGMENTS OF THE PLAN                               02727 05
*EXPERIENCE     CANDIDATE WRITES A SAMPLE PLAN(S) FOR A SPECIFIC UNIT (S)  02727 06
                OF STUDY.  PLAN INCLUDES9 A) OBJECTIVES RELATED TO         02727 07
                EVALUATION OF PREVIOUS LEARNING AND DISCOVERED NEEDS OF    02727 08
                LEARNERS) B)  MATERIALS NEEDED)  C)  MOTIVATING            02727 09
                EXPERIENCES)  D)  EXPERIENCES THAT INVOLVE THE LEARNERS)   02727 10
                E)  EXPERIENCES ARTICULATING THE LEARNER TO THE NEXT       02727 11
                LEARNING SEQUENCE)  F)  PROVISION FOR VARYING RATES OF     02727 12
                LEARNING)  G) MEANS FOR REVIEW AND EVALUATION OF THE       02727 13
                LESSON                                                     02727 14
*SETTING        INDEPENDENT                                                02727 15
*MATERIALS                                                                 02727 16
*LEVEL          ALL GRADES                                                 02727 17
*GENERAL        ALL CANDIDATES                                             02727 18
*HOURS          2                                                          02727 19
*EVALUATION     CANDIDATE'S SAMPLE PLAN INCLUDES ALL REQUIRED SEGMENTS     02727 20
*FILE           INTERNSHIP. UNIT PLANS                                     02727 21


*OBJECTIVES     ABILITY TO PREPARE AND USE WRITTEN PLANS OF INSTRUCTION    02728 01
                FOR A SPECIFIC UNIT OF STUDY                               02728 02
*PREREQUISITE   PLAN INCLUDES REQUIRED SEGMENTS                            02728 03
*EXPERIENCE     CANDIDATE USES PREVIOUSLY WRITTEN UNIT PLAN OF             02728 04
                INSTRUCTION. UNDER SUPERVISION                             02728 05
*SETTING        INDEPENDENT                                                02728 06
*MATERIALS                                                                 02728 07
*LEVEL          ALL GRADES                                                 02728 08
*GENERAL        ALL CANDIDATES                                             02728 09
*HOURS          10                                                         02728 10
*EVALUATION     OBJECTIVES OF UNIT ARE ACCOMPLISHED AS ALL SEGMENTS OF     02728 11
                PLAN ARE UTILIZED                                          02728 12
*FILE           INTERNSHIP. UNIT PLANS                                     02728 13


*OBJECTIVES     CANDIDATE CAN DEFINE AND DESCRIBE VARIOUS METHODS OF       02729 01
                REPORTING PUPIL PROGRESS AND DIFFERENTIATE THE PURPOSES.   02729 02
                PROCEDURES. STRENGTHS. AND WEAKNESSES OF EACH METHOD       02729 03
*PREREQUISITE   KNOWLEDGE OF HUMAN GROWTH AND DEVELOPMENT  (HUMAN          02729 04
                LEARNING)                                                  02729 05
*EXPERIENCE     CANDIDATE STUDIES THE CRITERIA. NEEDS. AND PURPOSES FOR    02729 06
                REPORTING PUPIL PROGRESS  CANDIDATE READS A SERIES OF      02729 07
                FOLIOS DESCRIBING VARIOUS REPORTING PROCEDURES (CARDS.     02729 08
                NOTES. CONFERENCES. HOME-CALLS. ETC.) AND LISTS THE        02729 09
                STRENGTHS AND WEAKNESSES BASED ON NEEDS AND PURPOSES       02729 10
*SETTING        INDEPENDENT                                                02729 11
*MATERIALS      MULTIPLE FOLIOS DESCRIBING VARIOUS METHODS OF REPORTING    02729 12
                PUPIL PROGRESS                                             02729 13
*LEVEL          ALL GRADES                                                 02729 14
*GENERAL        ALL CANDIDATES                                             02729 15
*HOURS          2                                                          02729 16
*EVALUATION     STRENGTHS AND WEAKNESSES NOTED RELATE TO FIXED CRITERIA.   02729 17
                NEEDS. AND PURPOSES. OR CAN BE JUSTIFIED                   02729 18
*FILE           INTERNSHIP. PUPIL PROGRESS                                 02729 19
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*OBJECTIVES      TO PRODUCE A REPORT OF PUPIL PROGRESS AND JUSTIFY IT ON    02730 01
                 THE BASIS OF SAMPLE DATA.  TO RESPOND WITH 80 0/0 ACCURACY02730 02
                 WITH PRE-SELECTED (PRE-DETERMINED) RESPONSES TO POSSIBLE  02730 03
                 VARIANT REACTIONS TO THE REPORT                           02730 04
*PREREQUISITE    KNOWLEDGE OF CRITERIA. NEEDS. PURPOSES. STRENGTHS. AND    02730 05
                 WEAKNESSES OF VARIOUS PROCEDURES FOR REPORTING PUPIL      02730 06
                 PROGRESS                                                  02730 07
*EXPERIENCE      CANDIDATE PREPARES A REPORT OF STUDENT PROGRESS BASED ON A02730 08
                 SAMPLE STUDENT FOLDER AND LATER JUSTIFIES THE MARKS BASED 02730 09
                 ON POSSIBLE VARIANT RESPONSES TO THE REPORT               02730 10
*SETTING         INDEPENDENT                                               02730 11
*MATERIALS       A VARIETY OF SAMPLE STUDENT FOLDERS CONTAINING MOCK. BUT  02730 12
                 REALISTIC. DATA                                           02730 13
*LEVEL           ALL GRADES                                                02730 14
*GENERAL         ALL CANDIDATES                                            02730 15
*HOURS           2                                                         02730 16
*EVALUATION      REPORT PREPARED REFLECTS AVAILABLE DATA ON STUDENT.       02730 17
                 JUSTIFICATION OF MARKS (OR REMARKS) TO VARIOUS RESPONSES  02730 18
                 CONFORMS TO FIXED CRITERIA WITH 80 0/0 ACCURACY           02730 19
*FILE            INTERNSHIP. PUPIL PROGRESS                                02730 20


*OBJECTIVES      CANDIDATE CAN DEFINE AND DESCRIBE VARIOUS ADMINISTRATIVE  02731 01
                 ORGANIZATIONAL PATTERNS FOR ELEMENTARY SCHOOLS (E.G. SELF 02731 02
                 CONTAINED. UNGRADED. TEAMED. DEPARTMENTALIZED. K-6. K-8.  02731 03
                 ETC.).  CANDIDATE CAN DESCRIBE THE OBVIOUS RELATIONSHIPS  02731 04
                 BETWEEN ORGANIZATION AND INSTRUCTION AS IT AFFECTS        02731 05
                 PLANNING                                                  02731 06
*PREREQUISITE    NONE                                                      02731 07
*EXPERIENCE      CANDIDATE STUDIES VARIOUS ADMINISTRATIVE ORGANIZATIONAL   02731 08
                 PATTERNS FOR ELEMENTARY SCHOOLS AND ASSIGNS DESCRIPTIVE   02731 09
                 STATEMENTS OF SCHOOL SETTINGS TO A LIST OF SUCH SCHEMES.  02731 10
                 CANDIDATE STUDIES THE STRENGTHS AND WEAKNESSES OF EACH    02731 11
                 SCHEME AS IT AFFECTS TEACHING                             02731 12
*SETTING         LARGE GROUP                                               02731 13
*MATERIALS       DESCRIPTIONS                                              02731 14
*LEVEL           ALL GRADES                                                02731 15
*GENERAL         ALL CANDIDATES                                            02731 16
*HOURS                                                                     02731 17
*EVALUATION      CANDIDATE CORRECTLY RELATES DESCRIPTIONS OF ORGANIZATIONAL02731 18
                 PATTERNS OF SCHOOLS TO THEIR DESCRIPTION AND CAN LIST THE 02731 19
                 STRENGTHS AND WEAKNESSES OF EACH SCHEME AS IT AFFECTS     02731 20
                 TEACHER PLANNING                                          02731 21
*FILE            INTERNSHIP. ADMINISTRATION                                02731 22


*OBJECTIVE       TO RECOGNIZE AND DEFINE THE IMPORTANCE OF POSITIVE        02732 01
                 COMMUNICATIONS BETWEEN THE PUBLIC AND THE SCHOOL.  PROVIDE02732 02
                 SOME PRACTICE IN PROPOSING AND COMPOSING SUCH             02732 03
                 COMMUNICATIONS                                            02732 04
*PREREQUISITE    NONE                                                      02732 05
*EXPERIENCE      CANDIDATE STUDIES AND CAN DESCRIBE BY EXAMPLES THE        02732 06
                 RELATIONSHIP BETWEEN PUBLIC SUPPORT FOR EDUCATION         02732 07
                 (TEACHER. SCHOOL. SYSTEM) AND POSITIVE/FREQUENT           02732 08
                 COMMUNICATION BY EDUCATIONAL AGENTS WITH THE PUBLIC  BASED02732 09
                 ON A SERIES OF VIGNETTES (PERHAPS OBSERVATIONS LATER)     02732 10
                 DESCRIBING A GROUP OF RELATED EDUCATIONAL DECISIONS AND   02732 11
                 ACTS OF A SCHOOL OR TEACHER. THE CANDIDATE WRITES A MOCK  02732 12
                 NEWS RELEASE PERTAINING TO ANY PART OR ALL OF THE ACTIONS 02732 13
*SETTING         INDEPENDENT                                               02732 14
*MATERIALS       FOLIO OF VIGNETTES DESCRIBING A SERIES OF EDUCATIONAL     02732 15
                 DECISIONS AND ACTS IN A SCHOOL OR CLASSROOM.  INCLUDES    02732 16
                 OBJECTIVES AND SEQUENCE OF IMPLEMENTATIONS                02732 17
*LEVEL           ALL GRADES                                                02732 18
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*GENERAL        ALL CANDIDATES                                          02732 19
*HOURS          1                                                       02732 20
*EVALUATION     NEWS RELEASE IS COUCHED IN POSITIVE, HONEST AND DIRECT  02732 21
                TERMS, AND ANSWERS THE QUESTIONS OF WHO, WHAT, WHERE,   02732 22
                WHEN, HOW, AND WHY.  ITEM JUDGED ACCEPTABLE, OR         02732 23
                MODIFIED TO ACCEPTABILITY, BY A PEER STUDENT EVALUATOR (S)02732 24
*FILE           INTERNSHIP, COMMUNICATIONS                              02732 25


*OBJECTIVES     EXPOSURE TO THE PUBLIC RELATIONS NATURE OF MEETINGS OF A  02733 01
                BOARD OF EDUCATION                                        02733 02
*PREREQUISITE NONE                                                        02733 03
*EXPERIENCE     CANDIDATE ATTENDS (PERSONALLY OR BY FILM) A PUBLIC BOARD  02733 04
                MEETING OF A SCHOOL DISTRICT AND NOTES ITEMS PERSONALLY   02733 05
                DEEMED SUFFICIENTLY SIGNIFICANT FOR NEWS REPORTING.  ONE  02733 06
                SUCH ITEM IS SELECTED, JUSTIFIED IN WRITING AS TO PUBLIC  02733 07
                SIGNIFICANCE, AND A MOCK NEWS ITEM WRITTEN AND SUBMITTED  02733 08
                WITH AN ACTUAL CLIPPING OF A NEWS REPORT OF THAT MEETING  02733 09
*SETTING        INDEPENDENT                                               02733 10
*MATERIALS                                                                02733 11
*LEVEL          ALL GRADES                                                02733 12
*GENERAL        ALL CANDIDATES                                            02733 13
*HOURS          3                                                         02733 14
*EVALUATION     MOCK NEWS ITEM CONVEYS INFORMATION AS TO WHO, WHAT, AND   02733 15
                WHY, WHERE, WHEN, AND HOW.  JUSTIFICATION MEETS STANDARDS 02733 16
                OF LOGIC OR IS VERIFIED BY ACTUAL NEWS MEDIA SELECTION    02733 17
                REPRESENTED BY CONTENT OF INCLUDED CLIPPINGS              02733 18
*FILE           INTERNSHIP, SCHOOL BOARD, COMMUNICATIONS                  02733 19
```

Instruction and experiences related to the concern stages of Internship will be handled individually in formal and informal groups by conferences, assignments, seminars, visitations, and recycling of selected earlier instructional modules. Such instruction will be administered primarily by intern consultants with specialist help from both the university and cooperating school districts.

The intern consultants in this program will gain no tenure with the program itself, but will be provided opportunities for experiential and academic growth.

Specializing interns will return to the university for further academic work, participate as apprentice intern consultants, and be eligible for exchange teaching opportunities related to their skills and interests.

The administration, financial and otherwise, for Internship has been modeled on the refinements of the original BSTEP and EIP programs as described in the BSTEP Final Report (Volume I, Section III, pp. 177-185). Ten years of experience with the EIP program limits need to study the feasibility of such an operation. It is presumed that the current EIP centers in operation in areas surrounding MSU will continue to operate until trainees from the new model program reach their third year when they will be absorbed into the BSTEP Pre-intern and Intern program. In earlier developmental periods EIP will serve as the coordinating agency for the clinical phases of BSTEP.

Implementation of Proposed Program

The results of this feasibility study by a nine-member task force supported by the reactions of four consultants lead to the following recommendations for the implementation of the five Clinical Experience Components of BSTEP.

Pre-Implementation

A director of Clinical Experiences and a clinical staff should be appointed several months prior to implementation. This cadre would be responsible for studying and revising existing modules, writing necessary new modules, and assuring that the objectives of modules are stated in behavioral terms when deemed appropriate; relating and sometimes meshing Clinical Experience modules with modules from other components of BSTEP; sequencing modules into feasible student programs; working out cooperative arrangements with public schools and community agencies; and, arranging for needed materials and facilities.

An evaluation panel should be appointed to work under the supervision of the Clinical Experiences Director in developing an evaluating guide and techniques appropriate for Clinical components of BSTEP.

Implementation Period

It is recommended that the Clinical Experience Program of BSTEP be implemented over a four year period. During this period each component of the Clinical Program would be tested and redevelop at least three times. The developmental sequence is illustrated as follows:

TABLE 3:1 PROPOSED IMPLEMENTATION SEQUENCE FOR CLINICAL EXPERIENCES

	Pre-Implementation	YEAR OF IMPLEMENTATION (September-August)			
Components		First	Second	Third	Fourth
Clinic I (Exploring Teaching) (Career Decision) (Analytical Study of Teaching)	D	T_1-R_1	T_2-R_2	T_3-R_3	T_4-R_4
Clinic II (Career Decision) (Analytical Study of Teaching) (Exploring Teaching)		D	T_1-R_1	T_2-R_2	T_3-R_3
Clinic III (Pre-Internship) (Analytical Study of Teaching) (Career Decision)		D	T^*_1-R_1	T_2-R_2	T_3-R_3
Clinic IV (Internship) (Analytical Study of Teaching)			D-T^*_1-R_1	T^*_2-R_2	T_3-R_3

KEY
D = Initial Development
T-R = Test and Redevelop
T_1-R_1 = First Test and Redevelop (T_2-R_2 = second, etc.)
T^*= Test with non BSTEP students

The Clinical Experience Program will begin with 100 freshmen the first year of implementation, adding 100 each year making a possible total of 400 students in the fourth year. The program components to be offered each year are shown in Table 3:2.

In the fourth year of testing, as shown in the chart, Exploring Teaching involves only two groups of students throughout the preparation program; namely, freshmen and sophomores. Career Decision and Analytical Study of Teaching components will be scheduled for students in each of the four classifications. Only juniors will be in Preinternship and only seniors will be in Internship.

The steps deemed necessary for the initial cycle of planning, initial development, testing, and re-development of the Clinical Experiences Program are diagrammed in the following PERT Chart.

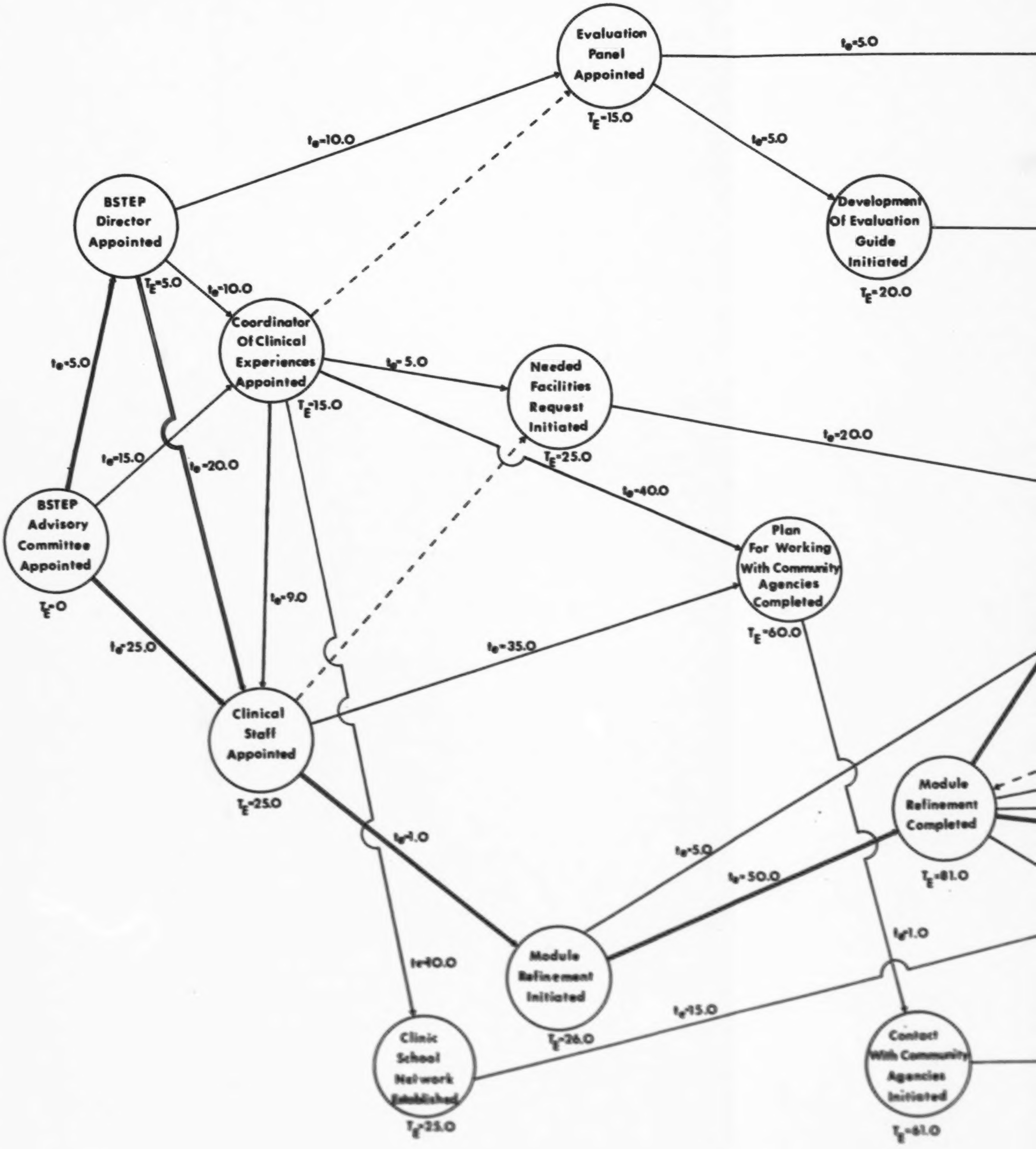
TABLE 3:2 PROGRAM FOR BSTEP STUDENTS

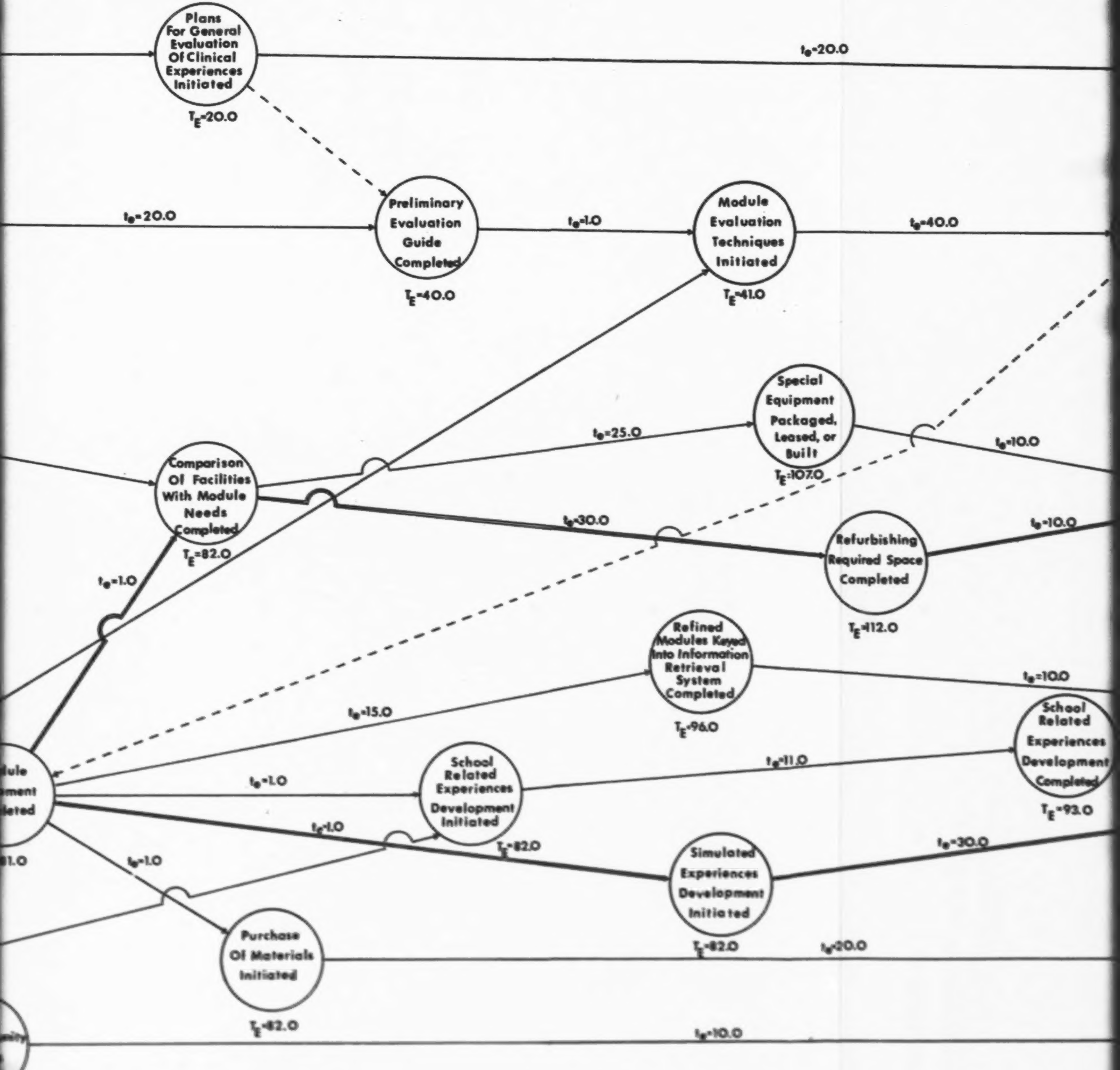
	IMPLEMENTATION PERIOD			
	1st Year	2nd Year	3rd Year	4th Year
Components involved each year during the implementation period	E, C, A	E, C, A	E, C, A, P	E, C, A, P, I
Components and classification of students enrolled	$E_f C_f A_f$	$E_f E_s$ C_f, C_s A_f, A_s	E_f, E_s C_f, C_s, C_j A_f, A_s, A_j P_j	E_f, E_s C_f, C_s, C_j, C_S A_f, A_s, A_j, A_S P_j I_S

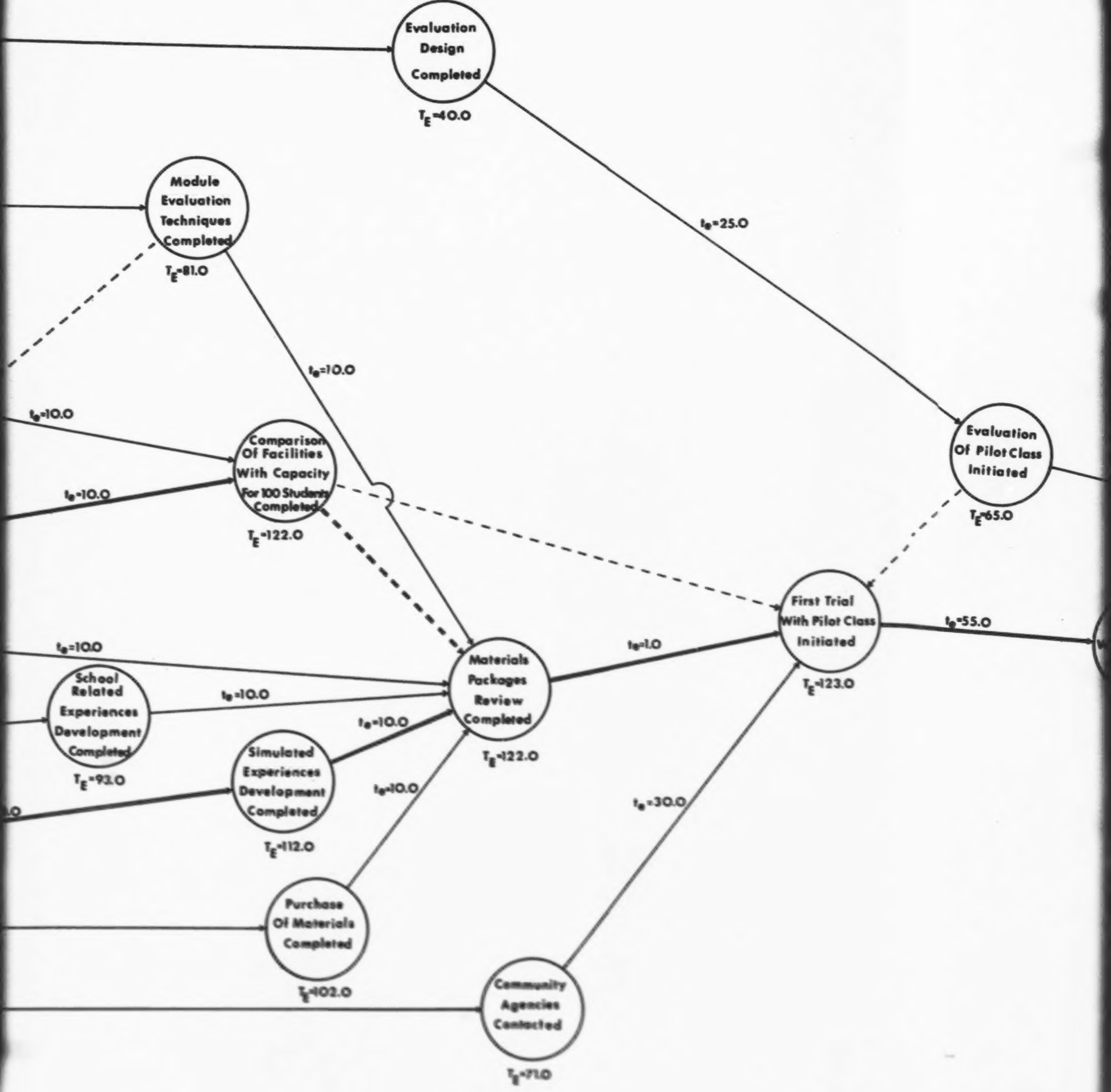
*COMPONENT KEY
E = Exploring Teaching
C = Career Decision
A = Analytical Study of Teaching
P = Pre-internship
I = Internship

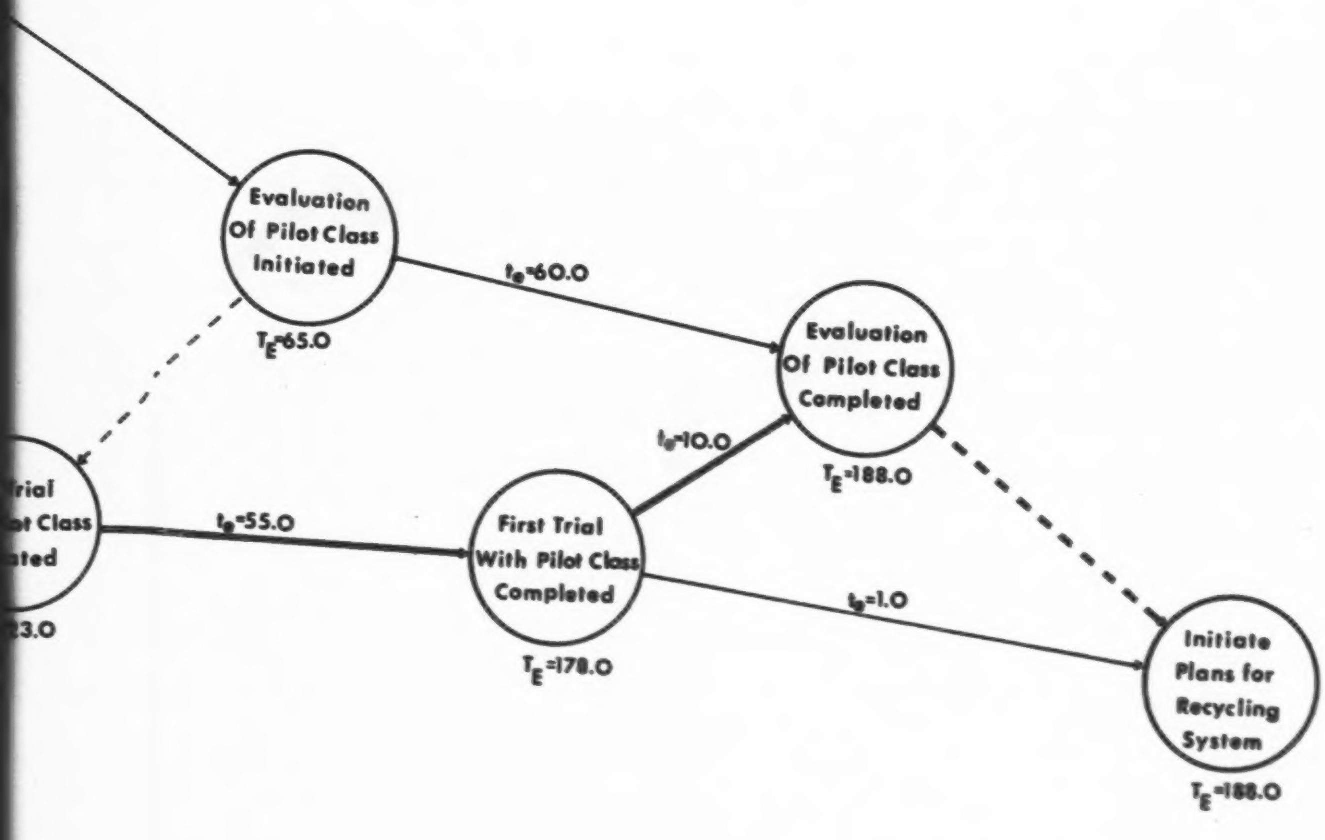
STUDENT KEY
Subscript f = freshmen
" s = sophomore
" j = junior
" S = senior

BSTEP-IMPLEMENTATION PHASE - CLINICAL EXPERIENCES


Evaluation Panel Appointed
T_E=15.0
t_e=5.0
t_e=10.0
t_e=5.0
BSTEP Director Appointed
T_E=5.0
t_e=10.0
Development Of Evaluation Guide Initiated
T_E=20.0
Coordinator Of Clinical Experiences Appointed
T_E=15.0
t_e=5.0
t_e=5.0
Needed Facilities Request Initiated
T_E=25.0
t_e=20.0
t_e=15.0
t_e=20.0
t_e=40.0
BSTEP Advisory Committee Appointed
T_E=0
Plan For Working With Community Agencies Completed
T_E=60.0
t_e=9.0
t_e=25.0
t_e=35.0
Clinical Staff Appointed
T_E=25.0
Module Refinement Completed
T_E=81.0
t_e=1.0
t_e=5.0
t_e=50.0
t_e=1.0
t_e=40.0
Module Refinement Initiated
T_E=26.0
t_e=15.0
Clinic School Network Established
T_E=25.0
Contact With Community Agencies Initiated
T_E=61.0


Plans For General Evaluation Of Clinical Experiences Initiated
T_E=20.0
t_e=20.0
t_e=20.0
Preliminary Evaluation Guide Completed
T_E=40.0
t_e=1.0
Module Evaluation Techniques Initiated
T_E=41.0
t_e=40.0
Special Equipment Packaged, Leased, or Built
T_E=107.0
t_e=25.0
t_e=10.0
Comparison Of Facilities With Module Needs Completed
T_E=82.0
t_e=30.0
Refurbishing Required Space Completed
T_E=112.0
t_e=10.0
t_e=1.0
Refined Modules Keyed Into Information Retrieval System Completed
T_E=96.0
t_e=15.0
t_e=10.0
School Related Experiences Development Completed
T_E=93.0
dule
ment
leted
81.0
t_e=1.0
School Related Experiences Development Initiated
T_E=82.0
t_e=11.0
t_e=1.0
t_e=1.0
Simulated Experiences Development Initiated
T_E=82.0
t_e=30.0
Purchase Of Materials Initiated
T_E=82.0
t_e=20.0
unity
t_e=10.0


Evaluation Design Completed
T_E=40.0
t_e=25.0
Module Evaluation Techniques Completed
T_E=81.0
t_e=10.0
t_e=10.0
t_e=10.0
Comparison Of Facilities With Capacity For 100 Students Completed
T_E=122.0
Evaluation Of Pilot Class Initiated
T_E=65.0
First Trial With Pilot Class Initiated
T_E=123.0
t_e=55.0
t_e=10.0
t_e=1.0
Materials Packages Review Completed
T_E=122.0
School Related Experiences Development Completed
T_E=93.0
t_e=10.0
t_e=10.0
.0
Simulated Experiences Development Completed
T_E=112.0
t_e=10.0
t_e=30.0
Purchase Of Materials Completed
T_E=102.0
Community Agencies Contacted
T_E=71.0


Evaluation Of Pilot Class Initiated
T_E=65.0
t_e=60.0
Evaluation Of Pilot Class Completed
T_E=188.0
t_e=10.0
rial
ot Class
ated
23.0
t_e=55.0
First Trial With Pilot Class Completed
T_E=178.0
t_e=1.0
Initiate Plans for Recycling System
T_E=188.0

PERT Chart 3:1 Clinical Experiences

(Page 161)

Chapter 4

CURRICULUM COMPONENTS

Introduction

This section of the feasibility study is charged with the responsibility for analyzing the human, material and fiscal resources required for three of the five program components of the Behavioral Science Elementary Teacher Education Program (BSTEP); namely, General-Liberal Education, Scholarly Modes of Knowledge and Professional Use of Knowledge. Recommendations are made to implement these components in the most feasible fashion. The curricular content of these components are:

General-Liberal Education provides a broad basic core for the program. Students learn and understand the role language plays in a society, the physical and biological aspects of the world, and differing cultures. They become more sensitive to their own roles in modern societies, grasp relationships as expressed in mathematics, and conceptualize man's potentialities. This education area is divided into three components: Humanities, Social Science and Natural Science.

Humanities in BSTEP comprise literature, art, music, philosophy, history, and religion of Western and non-Western Man; linguistics is included in Scholarly Modes of Knowledge, and language arts in Professional Use of Knowledge. Foreign languages are not included at present in the program concept. Social Science comprises anthropology, sociology and political systems. Natural Science includes mathematics.

Scholarly Modes of Knowledge, the second area in the undergraduate program, differs from General-Liberal Education in two essentials: 1) the content in Scholarly Modes of Knowledge is more directly applicable to teaching methods in the elementary school, and 2) the modes or styles of inquiry of scholars are stressed. The components of this area include linguistics; communications; literature for children including fiction and nonfiction; fine arts including art, dance and drama, music; social science; natural science; mathematics; and areas of possible specialization.

Professional Use of Knowledge teaches the student to translate knowledge into education action in classrooms and communities. The components are reading, language arts, social studies, science, and mathematics.

Under ideal conditions, feasibility estimates for these components would be obtained by assigning a researcher to each modular set, which would mean three for General-Liberal Education, seven for Scholarly Modes of Knowledge and five for Professional Use of Knowledge, for a total of fifteen researchers, each responsible for examining implementation criteria for a modular unit. By such a method firm feasibility assessments could be made for the total program. However, the present feasibility study was undertaken considerably short of this ideal; time and fund limitations did not permit such an extensive commitment of staff. What is presented in this report is a capsule study which projects feasibility assessments of each major component by extrapolation from singular parts of each component. Each part studied may be taken as a paradigm for the larger component. Instead of studying the entire General-Liberal Education Program component, we have concentrated on the Humanities modules. Likewise, Science was chosen for the Scholarly Modes of Knowledge and Social Studies for the Professional Use of Knowledge.

A margin of error must be tolerated when this approach is used. While there is good reason to argue that the Humanities modules present many of the characteristic problems for implementation of the General-Liberal model and, therefore, may justly represent the entire program component, it is equally certain that there are unique problems of implementation for Social Science and Natural Science in General-Liberal Education which cannot be anticipated by this study. Our study should be read in light of this major reservation, but the majority of problems for each component are detailed in this paradigmatic approach to the feasibility study.

The chapter is divided into three parts, one for each component studied: General-Liberal Education, Scholarly Modes of Knowledge, and Professional Use of Knowledge. Each part contains the following subdivisions: 1) a report on the background and rationale for the component, 2) recommendations for development of the component into a teaching program, 3) an outline of the step-by-step procedures of implementing the component, and 4) estimates for the required facilities, personnel, equipment and space needed for full implementation.

General-Liberal Education (Humanities as Paradigm)

Background and Rationale

A broad, basic core of general-liberal education, designed to foster individual fulfillment and to prepare citizens for participation in our society, is necessary in teacher preparation.

The encompassing and overriding objective of general-liberal education is to relate the student's knowledge to the study of human behavior. The present generation of students is more concerned with role playing than with information collecting. While basic information levels are important to achieve, the General-Liberal Education components of BSTEP seek to interpret the educational process as exercises in trying-on behavioral roles. The teacher needs a deep reservoir of experience in order to respond to the variety of human roles he is called upon to play. The treatment of the humanities in the BSTEP General-Liberal program is a good example of the design created to meet this need. Throughout the history of culture artists, poets, philosophers, prophets and musicians have created just such a reservoir of collective human experience from which the student and future teacher may profit. Lawrence Stenhouse wrote to this point:

> We understand by the humanities the study of both human behaviour and human experience. The study of human behaviour is broadly the concern of the social sciences: history, human geography, psychology and sociology. In some sense, those studies aspire to examine human behaviour objectively, viewing it as caused or as dictated by purposes which can be understood from observation rather than detailed subjective analysis. The study of human experience is reflected in the arts and in the biographical aspect of history. It is concerned with the subjective or existential aspects of human life, and one important criterion by which judgments of the arts are made is fidelity to human experience.[1]

Projecting a design to meet the future needs of teachers, we see a necessary change in undergraduate curriculum. Where we have in earlier decades given the impression that the factual approach to the natural and social sciences was the important part of education, with Humanities also important but essentially as upthrust of the social-scientific context, we will increasingly look at the creative-critical area as the starting point for individual development. "Foundations," whether in professional or general education, will be more in creative-critical work than in philosophy and the sciences. And the Performing Arts (music, dance, theatre) and the Visual and Plastic Arts (architecture, sculpture, painting, film) will be more essential than the scholarly (or even leisurely) study of literature, criticism, culture area context, and the like. Participation will be the key word--with people creating or trying-on behavior roles in safe situations, improvising personally essential treatments of space and time in art, music, dance and drama. Only when students have a core of personal value to relate "things" to, will it be considered educationally appropriate to open the sluice gates of facts.

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[1] Lawrence Stenhouse, The Journal of Curriculum Studies, 1968, I, i, p. 26.

Rather than providing a series of survey courses, this model proposed a basic core of general-liberal education experiences which emphasize the contributions the various disciplines of liberal arts and sciences make to an understanding of man, his behavior, his ideas, his society, and his world. The intent is to help prospective teachers develop the basic analytical and communication skills prerequisite for making intelligent decisions about current societal problems and for participating fully as educational leaders. Provision is made for students to become active participants in formulating educational structures which bridge personal experience and curriculum content.

The General-Liberal Education area is divided into three components: humanities, social science, and natural science. A Modes of Inquiry Seminar focuses upon similarities and differences among the problem-solving techniques of various disciplines. Detailed specifications for each of these sub-divisions may be found in Section IV of the first BSTEP Report.

Recommendations for developing and testing Humanities Component

It is appropriate that a teacher education model program draw on and extend the foundational experience of the past quarter-century of humanities development. New knowledge from esthetics is providing sharper focus on the roles of the arts and humanities in personal development and community unity. Increased attention to the arts and humanities in elementary and secondary schools poses new problems of curriculum design to which teachers of the several arts can find a contributory role. Emerging concern for the relationship of teaching method to scholarly method in all disciplines creates a challenge to experiment with alternate structural frameworks and instructional procedures. The high level of general awareness and participation of young people in art activities today raises real questions of the role of course instruction, of whether its purpose is the imparting of information or an opportunity for evaluation and coordination of cultural content available through school and non-school channels. During the earlier innovation in the Humanities in the 1930's, courageous thinkers proposed that education function as an agency for social change. Today it seems more appropriate to courageously change education by making it a functional participant in ongoing culture. The whole Humanities curriculum area is seen as a step in this direction.

The Humanities area employs a Gestalt of definitions and terminology, purposes and methodology, and introductory experiences in art, humanities and non-western culture. The provision of a Gestalt is excellent strategy and many modules should be expanded to include an even broader pattern.

Specific recommendations:

1. Increase emphasis on the performing arts
2. Create a Gestalt to include the natural and social sciences
3. Achieve balance in experience modules
4. Broaden the scope of writing experiences
5. Define the role of General-Liberal Program Coordinator

Emphasis on the Arts. The more closely we observe the work patterns of the "young creatives" the more we must abandon the cliched concept of the lone artist wrestling with the twin problems of art and poverty. Present day elementary school youngsters, growing up in a primarily participative society, must find ample opportunity in school for participative creativity. This, too, teachers in service or in training must conceptualize and guide with reasonable expertise. If they teach as they are taught, the BSTEP Program can equip them with valuable inventory (by way of Gestalt) of sophistication in the arts and humanities, to guide youngsters' explorations.

Creating a Gestalt to include the Natural and Social Sciences

Module 00175 makes reference to the administrative division of labor among the sciences and humanities in a General-Education program. Not only must the differences be stressed, but also the similarity of their fundamental motivations and satisfactions. Their common center in esthetic experience can provide the generative idea for all three components of the General-Liberal Education section.

In BSTEP it is appropriate to note the psycho-biological origins of art. There is no truth in the persistent idea that the arts and humanities exist on the surface of human living as decoration, play or "worthy use of leisure time," or as representations of values inferior to the cognitive systems of the sciences, history, and philosophy. Such an idea denies the biological bases of human individuality and the psychological processes through which, in insuring his integrity through design, the individual participates in the evaluation of his culture.

The achievement of the sense of order for the individual is rendered possible through man's uniqueness as symbol user. Before all other characteristics man is homo symbolicus; and the clearest differentiation from other animals and the clearest delineation of individuality among men lie in the handling of experience in two major symbolic modes: 1) Discursive symbols, which provide correlation between names and things and between concepts and things; verifiable and duplicable, they conform to laws of syntax and mathematics. 2) Non-discursive symbols, which are neither verifiable nor duplicable, serve the expression of personal perceptions at a given point in space-time. They do not represent actual experiential events or feelings; they do represent moving experiences in literature and myth, and ideas of feelings and illusions of virtual experience in the arts--the illusion of virtual space in plastic arts; the illusion of virtual time in music; the illusion of virtual power and control in dance; the illusion of virtual memory in literature; the illusion of virtual dream in film.

The significance of the two symbolic modes and of symbol-use in each art medium constitutes a unique and essential increment in the full realization of the individual. Teachers of elementary school youngsters must know this conceptually. In the processes of transactional participation in his environment, the "becoming" individual transforms all experience symbolically. The more comprehensive transformations eventuate in completed scientific formulations, political designs, theological constructs or works of art in one or another medium. As the late John Steinbeck, marine biologist and novelist, wrote in The Sea of Cortez, "the impulse that drives a man to poetry will send another man to tide pools and force him to report what he finds there."

This is a fundamental concept to be built into the BSTEP Program. On its implementation in the program and later professional teaching lives depends the essential working rapprochement between the arts and sciences for which every major social philosopher of the last quarter century has worked.

Achieving Balance in Experience Modules

While the feasibility of the concept of General-Liberal Education is not in question, this study recognizes BSTEP's acknowledged need for developing and redeveloping modules. A balanced program is the first requirement. Four tables are given to show the number of modules in Humanities by setting and size of group, those which list writing exercises, number of hours listed, and division of experiences between lectures and media. Table 4:1illustrates the various emphasis placed in module units in Humanities on experience setting. Based on a desirable balance in student experience, Humanities I needs considerable lead time to increase the number of small-group experiences. There are 47 independent modules and 42 large-group modules, but only 19 modules designed for small-group experiences. Students need considerable choice and flexibility early in their program. It is understandable that researchers, pressed by time, produced fragments in need of correlation. Implementation must provide lead time to correlate modules and overall program design.

Further documentation for the needs of developmental lead time is seen in Table 4:3. This table shows the spread of time assigned to experience modules. In their first attempt to write performance-based objectives, the developers used the single class-hour as the basic unit. Out of 323 modules, 108 are single-hour modules. With the double-hour modules (71), over half of all modules are geared to the conventional schedules in most colleges. Only 37 modules were written for experiences lasting less than one hour, even though developers were encourage to produce brief behavioral units. In fact, many broad and imprecise modules encompass many hours of achievement. Humanities I, II and III offer the possibility of 240 student-contact hours. On the basis of a class hour for each module and for each independent preparation for class, a minimum of 480 modules would be required; and even more as development of this area moves to accomplish a performance based evaluation of student achievment. The program presently is 157 modules short of this minimal goal.

Some evidence of program balance is available, however, in the content of the present modules. Contrasting lectures with media experiences in curriculum, Phase I designs produced almost equal numbers of modules in the two categories, 50 to 48. See Table 4:4.

Writing

Nothing in the program for teachers is more important than the development of fluency in the use of language. Fluency aids communications, awareness of self, others and of every phase of education. Though the program design for Humanities asserts that "writing exercises are designed for each phase of the program...," the modules themselves do not support the assertion. As seen in Table 4:2, some phases of Humanities have more writing exercises. It was expected that art and music would have fewer language exercises than those with literature for study. Nevertheless, there is cause for concern that developing writing skills not be limited to the literature staff, much less to Humanities alone. A total of 86 writing exercises in 240 contact class-hours is respectable, but of little significance unless a coordinated writing development and a performance based evaluation program are designed for the whole of General-Liberal Education, including social science and natural science.

A set of writing objectives should be constructed to emphasize the particular need for precision of expression and general communication ability on the part of future teachers. The coordination of such a program should be the responsibility of a General-Liberal Education coordinator. A development staff should create objectives reflecting sequentially developed skills. For instance, students should give first attention to being specific, providing accurate, appropriate, and concrete support for general statements, and avoiding non-standard English. Subsequently, the list of objectives would be expanded to include understanding of parallelism and balance, demonstration of the relationships between ideas, capacity for the relationship between ideas, capacity for extrapolation and analysis of data, and other more abstract skills.

Failure can be predicted if such matters are left to chance. Assigning papers and other written exercises cannot be identified with the process of teaching effective writing. It is proposed that, as modules are developed:

1. reading selections be chosen, when possible, with an eye to their rhetorical excellence

2. writing objectives be specified in separate modules

3. evaluation of student writing be geared to specific objectives in each module

4. a diversity of writing types be listed to assure adequate variety in writing style

5. modules describing journal entries be more specific in stating style objectives

Perhaps it will be necessary to develop a cadre of writing coaches to augment the teaching staff for General-Liberal Education. In any case, faculty in-service training in teaching and evaluating

TABLE 4:1 NUMBER OF MODULES LISTED BY SETTING FOR HUMANITIES

Module Setting	Humanities I					Humanities II				Humanities III	Total
	Intro.	Lit.	Art	Mus.	Sub Total	A.	B.	C.	Sub Total		
Independent	21	15	11	--	47	16	33	8	57	18	122
Large Group	10	17	1	14	42	3	8	9	20	16	78
Small Group	13	--	--	6	19	10	22	26	58	25	102
No Setting Listed	1	--	--	1	2	--	4	2	6	--	8
Studio	--	--	8	--	8	--	--	--	--	--	8
Other	--	--	--	--	--	--	6	--	6	--	6
Total											324

TABLE 4:2 NUMBER OF HUMANITIES MODULES WHICH LIST WRITING EXERCISES

	Humanities I					Humanities II				Humanities III	Total
	Intro.	Lit.	Art	Mus.	Sub Total	A.	B.	C.	Sub Total		
Writing Exercises	12	9	1	1	23	6	16	36	58	5	86

TABLE 4:3 NUMBER OF HOURS LISTED PER MODULE FOR HUMANITIES

Module Hours	Humanities I					Humanities II				Humanities III	Total
	Intro.	Lit.	Art	Mus.	Sub Total	A.	B.	C.	Sub Total		
Less than 1	4	--	--	--	4	--	10	6	16	17	37
1	26	18	1	12	57	3	22	2	27	24	108
1 1/2	--	3	3	--	6	--	1	--	1	--	7
2	9	6	8	5	28	9	26	2	37	6	71
3 to 4	5	2	7	3	17	10	9	--	19	6	42
More than 4	1	3	1	--	5	2	5	4	11	5	21
Not set	--	--	--	--	--	5	--	2	7	1	8
Class Period	--	--	--	--	--	--	--	29	29	--	29
Total											323

TABLE 4:4 CONTRAST OF MODULE EXPERIENCES LISTED IN HUMANITIES

Module Experience	Humanities I					Humanities II				Humanities III	Total
	Intro.	Lit.	Art	Mus.	Sub Total	A.	B.	C.	Sub Total		
Lectures	5	2	--	--	7	2	8	5	15	26	48
Media	5	--	4	10	19	4	15	2	21	10	50

writing skills is a necessary part of program implementation.

Role of General-Liberal Program Coordinator

The diversity of experience modules and the variety of performance objectives designed for the General-Liberal program call for a high order of coordination. The maintenance of an individualized writing improvement program for students as part of their general education is but one example of the kind of coordination needed. The task force for feasibility recommends that a professor be appointed to perform the role of Program Coordinator. His responsibilities would include: chairing program development task forces, teaching part time in all areas--especially for those modules in Humanities, Social Science and Natural Science which share common content objectives, coordinating prototype testing of components, directing the conduct of the Modes of Inquiry Seminar, and maintaining a harmonious working relationship with academic departments contributing faculty to the General-Liberal Program of BSTEP.

Steps to Implementation

The implementation of the General-Liberal Program of BSTEP procedes through a series of developmental and prototype testing activities over a four year period. Prior to the first year of testing modules with BSTEP students the following sequence of activities must take place.

January - April of Pre-implementation Period

1. Identify and recruit potential staff
    a. Program Coordinator
    b. Professors for teaching and development
    c. Media technicians and evaluators
    d. Graduate assistants

2. Make preliminary arrangements for staff appointments through deans and departmental chairmen

3. Assemble materials

4. Study modules and coordinate plans for options to be taken in improving and expanding General-Liberal program

5. Begin discussion with University College and other agencies to determine appropriate credit and corresponding evaluation system for BSTEP students meeting university requirements

April to June, Pre-implementation Period

1. Appoint staff for developing new modules and redeveloping existing modules

2. Coordinate educational objectives between Science, Social Science and Humanities

3. Refine program objectives along basic themes for Humanities I

4. Assemble and catalog materials

5. Plan writing program and coordinate with team for central evaluation and record keeping

6. Develop faculty orientation, in-service training and evaluation procedures

7. Secure space for classrooms and study carrels for fall of 1970

8. Develop student evaluation procedures and create working relationship with student admissions and counselling committee

9. Order equipment for Humanities I, Social Science I and Natural Science

July to September, Pre-implementation Period

1. Continue development of modules

2. Bring in consultants for evaluation of program objectives and the methods and materials for achieving objectives

3. Secure office space for General-Liberal program

4. Complete library and materials center for General-Liberal program

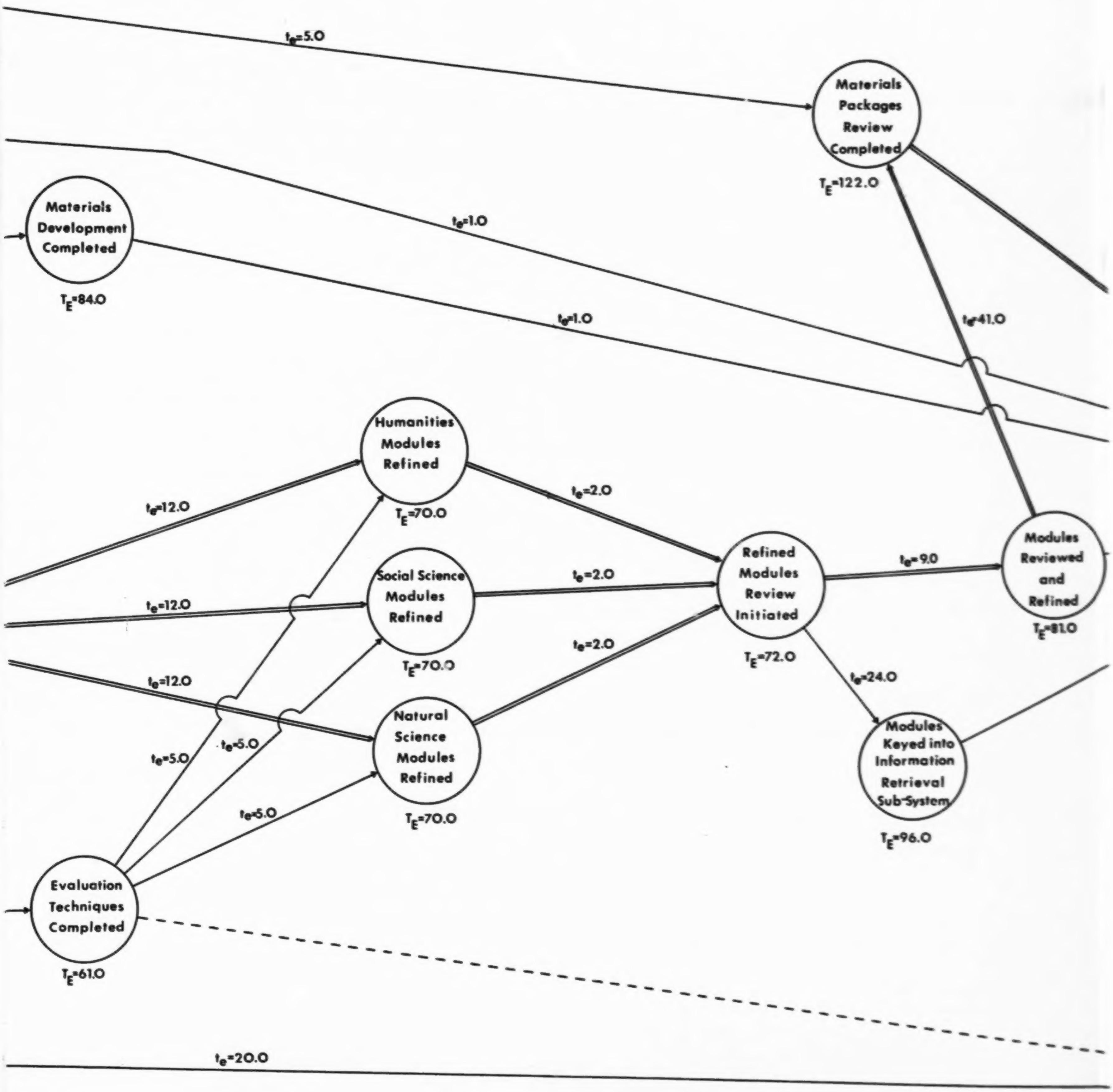
5. Equip classroom space and study carrel areas

6. Complete programming activities for the communication-writing segment of General-Liberal program

7. Run a check on complete modules through computer analysis and complete print-out of first year activities

PERT Chart 4:1 General-Liberal Education

(Page 175)



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Social Science Modules Refined
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t_e=2.0
Refined Modules Review Initiated
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Modules Reviewed and Refined
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t_e=24.0
Natural Science Modules Refined
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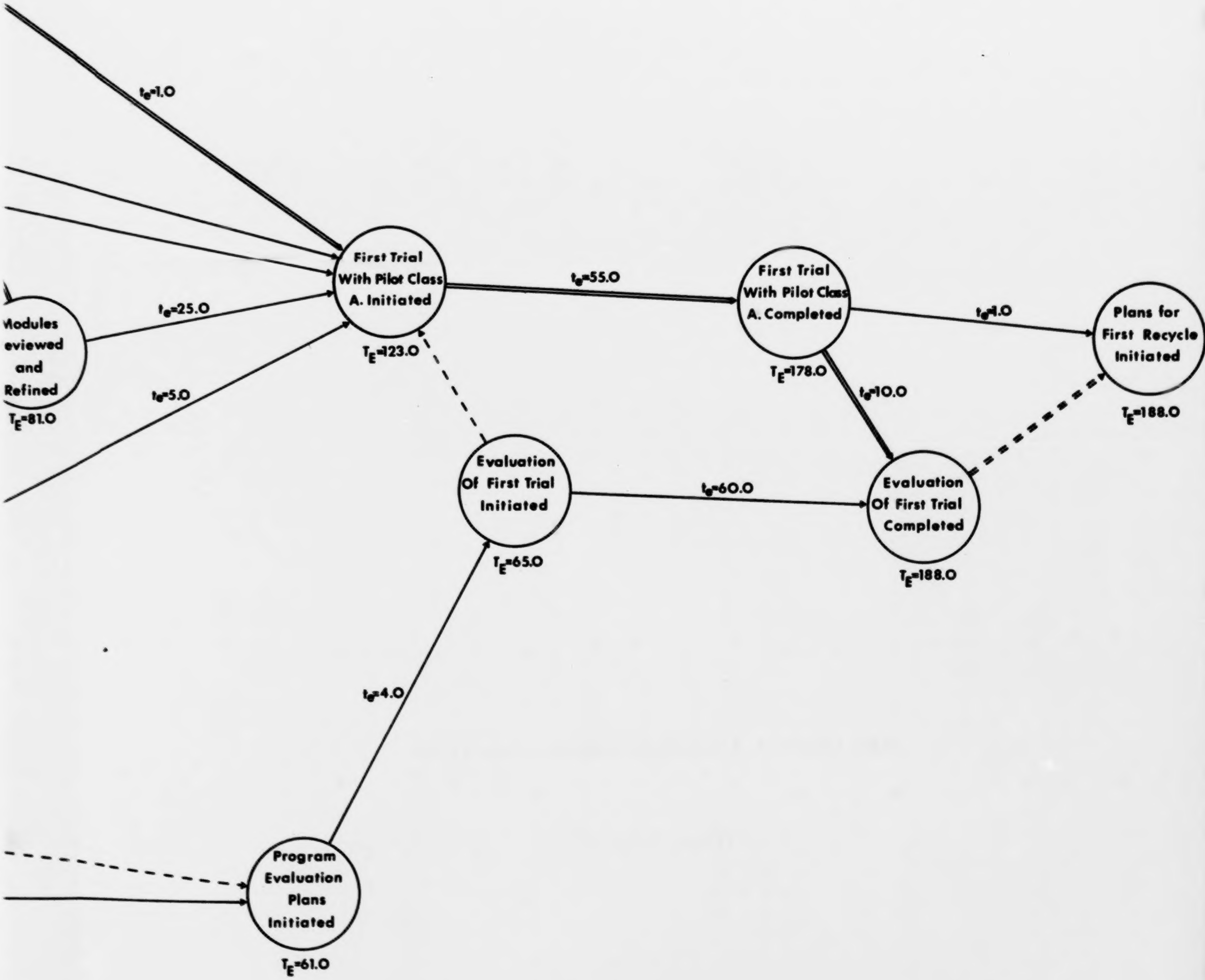
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First Trial With Pilot Class A. Completed
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Modules
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and
Refined
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Evaluation Of First Trial Completed
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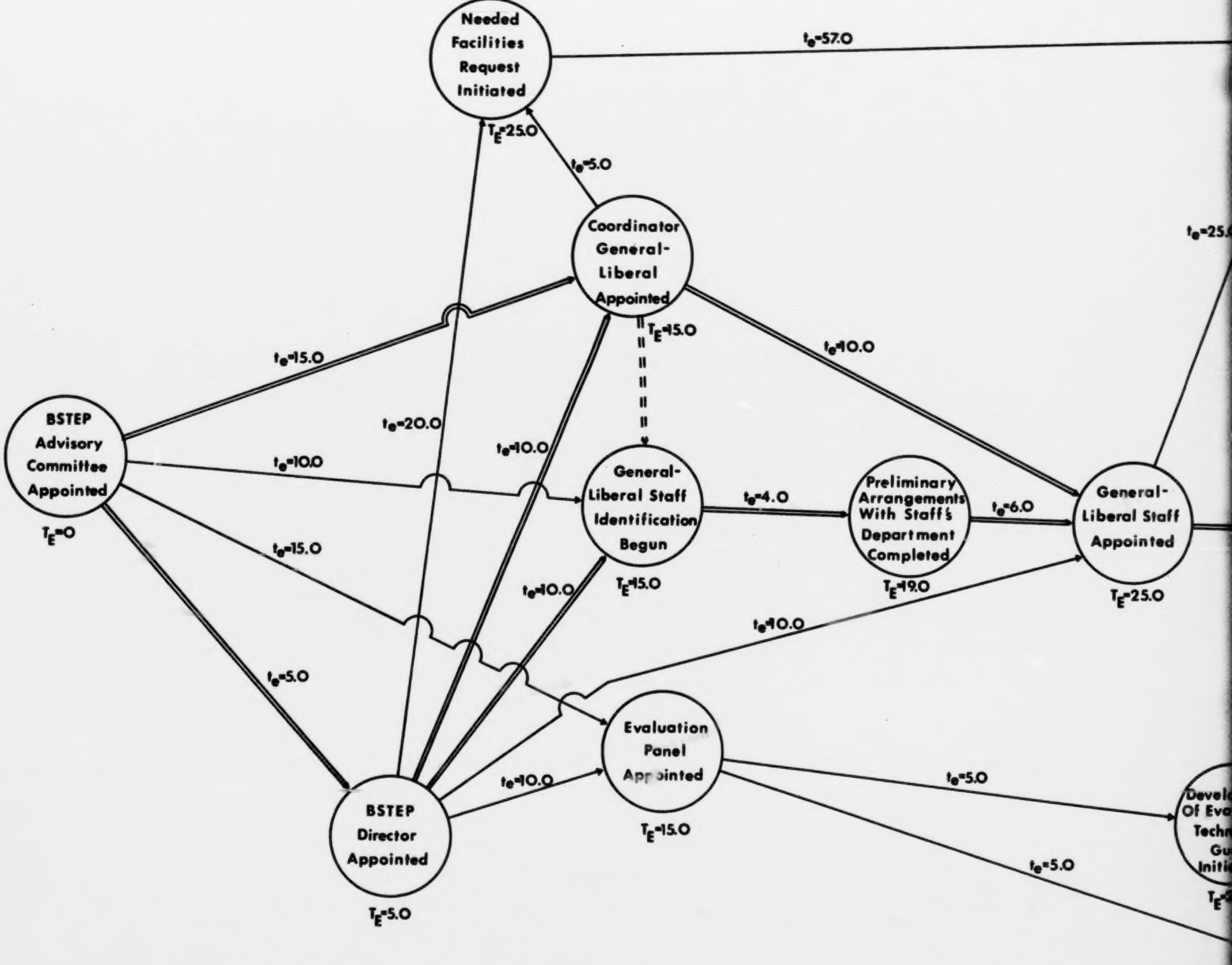
BSTEP IMPLEMENTATION PHASE - GENERAL LIBERAL EDUCATION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Coordinator General-Liberal Appointed
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t_e=15.0
t_e=10.0
BSTEP Advisory Committee Appointed
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General-Liberal Staff Identification Begun
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Preliminary Arrangements With Staff's Department Completed
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General-Liberal Staff Appointed
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t_e=10.0
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Evaluation Panel Appointed
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t_e=10.0
BSTEP Director Appointed
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Devel
Of Eva
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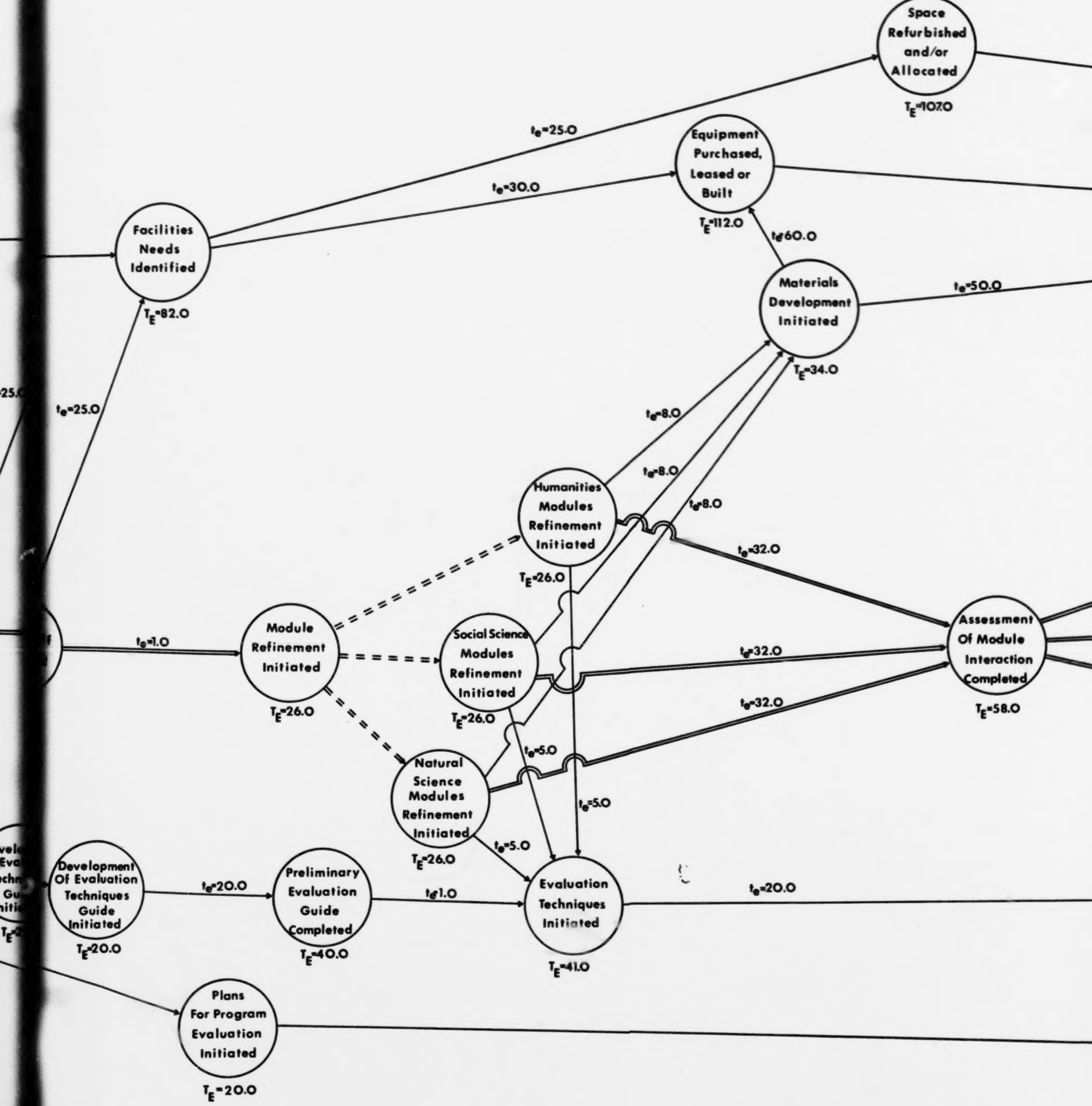
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Module Refinement Initiated
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Social Science Modules Refinement Initiated
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Evaluation Techniques Initiated
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Plans For Program Evaluation Initiated
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For a description of the rationale and process for modular development and testing, the reader is directed to the "Program Development Design" chapter in this feasibility study. In summary, the General-Liberal Program will include the following elements:

Instruction Design

Prototype Testing

Production

Quality Verification

Instructional Technology

Staff Training

The developmental sequences for the General-Liberal Program is illustrated by Table 4:5. Several features of this design may be noted. General-Liberal Education experiences will be spread out through three years of the first BSTEP class of students. For example, Humanities I will be developed in the Pre-implementation Period for testing the first year. Humanities II will be developed in the first year for testing in the second year. Social Science I, II, and III likewise will be developed and tested by parts, from the first through the third year. Some testing will necessarily take place with a non-BSTEP random sample of students, e.g. Humanities III. The result will be to insure a testing of each component for at least three years in the four year implementation period. By the fourth year all General-Liberal Education components will have been tested and redeveloped three to four times. As each testing year passes the cost of personnel and materials for recycling modules is reduced. The best estimate for a model teacher education program indicates a normal redevelopment cost index of 10 percent on an on-going basis. The continuous redevelopment and refinement of modules is a characteristic feature of the BSTEP model.

Personnel, Facilities and Materials

On the basis of the design for developing the General-Liberal Education program, estimates can be made as to the personnel and resource needs for each development period. In Table 4:6 is tabulated the personnel needs and in Table 4:7 the material resources required for implementing this section of the BSTEP model.

TABLE 4:5 PROJECTED DEVELOPMENTAL SEQUENCES WITH CORRESPONDING PERSONNEL NEEDS FOR GENERAL-LIBERAL EDUCATION

Components	Pre-implementation	Year of Development (September-August)			
	(6 months)	First	Second	Third	Fourth
Humanities I [9]*	D** 2P+1C+2TA***	T_1-R_1 (.60) 1.5P+1.5TA+1C	T_2-R_2 (.40) 1P+1TA	T_3-R_3 (.20) 1P+1TA	T_4-R_4 (.10) 1P+1TA
Humanities II [12]		D 1.5P+2TA+1C	T_1-R_1 (.60) 2P+2TA	T_2-R_2 (.30) 1.5P+1.5TA	T_3-R_3 (.10) 1P+1TA
Humanities III [3]			D-T_1^N -R_1 (.75) 1P+1TA	T_2 -R_2 (.50) .7P+1TA	T_3-R_3 (.25) .3P +1TA
Social Science I [4]	D 1P+1TA+1C	T_1-R_1 (.60) .7P+1TA	T_2-R_2 (.30) .5P+5TA	T_3-R_3 (.20) .3P+.5TA	T_4-R_4 (.10) .3P+.3TA
Social Science II [4]		D .5P+1TA	T_1-R_1 (.75) .5P+1TA	T_2-R_2 (.50) .3P+.5TA	T_3-R_3 (.25) .3P+.3TA
Social Science III [4]			D+T_1^N +R_1 (.75) 1P+1TA	T_2-R_2 (.50) .7P+1TA	T_3-R_3 (.25) .3P+.3TA
Natural Science I [4]	D 1P+1TA+1C	T_1-R_1 (.60) 1P+1TA	T_2-R_2 (.30) .7P+1TA	T_3-R_3 (.15) .3P+.7TA	T_4-R_4 (.10) .3P+.3TA
Natural Science II [4]		D .5P+1TA+1C	T_1-R_1 (.60) .5P+1TA	T_2-R_2 (.30) .3P+.5TA	T_5-R_3 (.10) .3P+.5TA
Math 4			D-T_1^N -R_1 (.75) 1P+1RA+1C	T_2-R_2 (.40) .7P+1RA	T_3-R_3 (.20) .3P+.7RA
Modes of Inquiry [3]	1 Co-ord.	1 Co-ord.	D-T_1^N-R_1 (.75) 1 Co-ord.	T_2-R_2 (.40) 1 Co-ord	T_3-R_3 (.20) 1 Co-ord.
Total Personnel	5P+4TA+3C (X.5)	6.7P+7.5TA+3C	9.2P+8.5TA+1C+1RA	6.8P+6.7TA+1RA	51.1P+4.7TA+7RA

*Bracketed numbers represent credit hour equivalency for each component.

**Top line figures represent: D=Initial Development; T-R=Test and Redevelopment; T_1-R_1=First Test and Redevelopment; T^N=Test with Non-BSTEP Students; (.45)=Estimated Redevelopment Index (materials only).

***Second line figures represent "full-time-equivalents" (FTE) for: P=Professor; TA=Teaching Assistant; RA=Research Assistant; Co-ord.=Co-ordinator; C=Consultant.

TABLE 4:6 PROJECTED PERSONNEL FOR GENERAL-LIBERAL EDUCATION PROGRAM

Personnel*	Pre-implementation (6 months)		Year of Development (September-August)							
			1		2		3		4	
	Persons	FTE	Persons	FTE	Persons	FTE	Persons	FTE	Persons	FTE
Academic										
Professor	1	.5	2	1.5	3	2	3	2	3	1.5
Associate Professor	1	.5	3	1.5	4	3.2	5	2	4	1.6
Assistant Professor	3	1.5	6	3.7	7	4	7	2.8	7	3
Graduate Assistant I	40	4	4	4	4	4	3	3	2	2
Graduate Assistant II			3.5	3.5	3	3	2.7	2.7	2	2
Graduate Assistant III					1.5	1.5	2	2	1.7	1.7
Office and Secretarial										
Grade III			1	1	1	1	1	.5		
Grade IV	1	.5	1	1	1	1	1	1	1	1
Grade V					1	.5	1	.5	1	1
Technical Staff		Services to be supplied by Instructional Resources Support System								
Media Technician	1	.5	1	1	1	1	1	1	1	1
Consultants	15 days		20 days		25 days		10 days		5 days	

*All personnel are listed in right column as full-time-equivalents (FTE) 12 month base, except graduate assistants who are half-time aides and consultants who are hired for program development and evaluation at per day rate.

TABLE 4:7 RESOURCE NEEDS FOR GENERAL-LIBERAL EDUCATION PROGRAM*

Resources	Pre-implementation .5 (6 months)		Year of Development Implementation							
			1		2		3		4	
	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor
Office Supplies (units)	10	100%	25	100%	30	100%	25	100%	25	100%
Telephones	6	100%	12	100%	15	100%	14	100%	14	100%
Paper (reams)	10	100%	25	100%	30	100%	25	100%	25	100%
35mm film (rolls)	50	100%	60	100%	60	100%	60	100%	50	100%
Audio Tape	20	100%	25	100%	30	100%	40	100%	30	100%
Video Tape	5	100%	10	100%	20	100%	20	100%	15	100%
Art Supplies (units)	--	---	100	100%	100	100%	100	100%	100	100%
Records ($5.00)	--	---	25	25%	25	25%	25	25%	25	25%
Art Transparencies	--	---	50	100%	50	75%	50	50%	50	50%
Science Instruction package(units)	--	---	250	100%	500	100%	500	100%	500	100%
Science Demo. package (units)	--	---	10	75%	20	50%	20	50%	20	50%
Computer Time (hours)	2	100%	3	100%	3	100%	3	100%	3	100%
Key Punch	1	25%	1	10%	1	10%	1	10%	1	10%
Film Processing	--	---	---	---	---	---	---	---	---	---
Nikon 35mm Camera	1	50%	1	50%	1	25%	1	25%	1	25%
Copy Lens (Micro Nikon)	1	50%	1	50%	1	25%	1	25%	1	25%
135mm Telephoto	--	---	1	50%	1	25%	1	10%	1	10%
28mm Wide Angle	--	---	1	50%	1	25%	1	10%	1	10%
Tape Recorder	1	50%	2	50%	2	50%	2	50%	2	50%
Video Recorder	1	25%	1	25%	1	50%	1	50%	1	50%
Film Rental (#)	--	---	10	100%	15	100%	15	100%	15	100%
KLH Phono	--	---	1	50%	1	50%	1	50%	1	50%
16mm Projector	--	---	1	10%	1	20%	1	20%	1	20%
Super 8mm Projector	--	---	1	10%	1	20%	1	20%	1	20%
Overhead Projector	--	---	3	50%	3	75%	3	75%	3	75%
Carousel Slide Projector	--	---	1	25%	2	25%	2	50%	2	50%
Study Carrel	--	---	50	50%	50	100%	50	100%	50	100%
Wet Carrel	--	---	12	25%	12	50%	12	75%	12	75%
Laboratory Stations	--	---	14	25%	14	50%	14	50%	14	50%
Projection Screens	--	---	3	25%	3	25%	3	50%	3	50%
Portable Science Demo.	--	---	1	25%	1	50%	1	50%	1	50%
Faculty Travel	6	---	12	---	14	---	14	---	14	---

*The materials and supplies listed under Resources are to be applied by the BSTEP Instructional Resources Support System

Scholarly Modes of Knowledge (Natural Science)

Background and Rationale

The proposed series of learning episodes for the Scholarly Modes of Knowledge will follow the same modular format as other parts of the overall program. In fact, the component modules for a number of the skills needed by an elementary classroom science teacher are in current use. The total two term experience has been planned as an integrated sequence rather than as two disparate courses. Thus, a given student might be more than halfway through the required modules by the time one term has passed.

As indicated in the document on General-Liberal Education, the modules prepared in the first writing session were illustrative rather than comprehensive. Each of the samples was an attempt to utilize the two-way classification of content and process developed for the Scholarly Modes of science knowledge. The one term off-set between this component and its corresponding Professional Use segment will allow the student to apply his newly acquired knowledge in a classroom setting while he still can take corrective action. The basic or required modules in each part of the outline are to be supplemented by additional optional modules wherever possible. Much of these optional episodes will be developed in conjunction with the first trials of the program and the accompanying evaluation and revision efforts.

The distribution of specific discipline-oriented topics which serve as the vehicle for given concept and process units was made on the basis of a study of existing curriculum materials. In most text book series and in the newer curriculum project materials the apparent ratio of topics is about 3 or 4 parts biology to 2 parts physical science to 1 part earth and space science. Not only do we hope to maintain this ratio in the program but whenever feasible to utilize activities suitable for use in the elementary classroom.

We hope to provide the student with:

1. Sufficient background information so that he is comfortable with the concepts he is expected to teach

2. The skills he needs to be able to exhibit the behaviors expected of the children when dealing with a system

3. Specific information on particular experiences and activities useful in the planning of successful learning episodes

4. Direct contact with an instructional system where the college instructor serves as a helper or aid to the learning activity of the student

Recommendations

We expect to begin with some considerable experience from the modular development of an auto-tutorial system. The present Biological Science course at MSU for teachers along with a Physical Science course serves a role similar to that proposed here. The BS 202 experience has just undergone a three year revision program and began on-line operations at the rate of 450 students per quarter in September, 1969. To duplicate much of this effort would be wasteful and therefore the materials will be carefully screened for application to Scholarly Modes of Knowledge--Science I.

A committee of scientists, science educators and elementary education specialists is expected to begin a similar study of the Physical Science course in the spring of 1970. The work of this project will no doubt have a considerable impact on any proposed changes. Again should new episodes be suggested, they will be studied for application to this project. Other institutions may wish to obtain descriptions of these courses before proceeding with implementation efforts.

The basic theme of the program is, simply, studying the world by using the systems called science. The student, not unlike the elementary school pupil, will move from things to their properties, then to classifications and changes that are observed in properties. Next the idea of causality and interactions is examined, which leads to energy changes and finally to the building of models or explanations.

At each stage, the communicating of one's observations to others is stressed and the use of graphs, drawings, equations and verbal systems is incorporated. The processes or ways information is gathered and used is the real basis of the study, rather than any inherent value of the information itself.

The mode of instruction is expected to include carrel presentation of stimuli accompanied by warm, friendly, immediate contact with an instructional assistant as needed. This scheme is interspersed with occasional lectures or long films and weekly opportunities for discussion in small (16) and oral quiz in smaller (8) groups.

Steps to Implementation

The Scholarly Modes of Knowledge Program will be developed and tested by the same design criteria as indicated in the Program Development Design section of this feasibility study. Table 4:8 projects the sequence of development and testing activities for SMK. It is to be noted that each component will be tested and redeveloped at least three times in the four year model period.

Personnel, Facilities and Materials

The Scholarly Modes of Knowledge-Sciences component has special physical requirements. The student will receive his instruction in four physical settings, a medium size lecture room, a carrel laboratory, independent study areas and in small discussion rooms. The lecture room should have a minimum capacity of 150. One carrel laboratory should have 24 carrel stations. The student should be able to go beyond his common carrel experience to the laboratory if necessary and be able to spread work out on conventional laboratory tables. Such an arrangement can allow for the development of small group carrel exercises as well.

Each laboratory would contain 6 tables (4 stations per table) equipped with water, air, electricity, and gas. Rather than fixed utilities from the floor, the common leads could be suspended from the ceiling on coiled, retractable drums. Other possible techniques for achieving maximum flexibility will be investigated. The arrangement should allow the tables to be moved to various configurations depending upon the requirements of the particular exercise.

One half the carrels should be of the standard type, supplied with just electricity, while the remainder would have a small sink and complete utilities. The carrel could be attached to the overhead facilities when in use just as the laboratory tables, thus eliminating the need for excessive plumbing and wiring. The twenty-four carrels would also have tape recorders, single concept film projectors, 35mm slide projectors, and mirror screens.

Major audio-visual equipment for use in either the carrel laboratory or in other settings is listed in **Table** 4:9.

TABLE 4:8 PROJECTED DEVELOPMENTAL SEQUENCES WITH CORRESPONDING PERSONNEL NEEDS FOR SCHOLARLY MODES OF KNOWLEDGE

Components	Pre-implementation	Year of Implementation (September-August)			
	(6 months)	First	Second	Third	Fourth
Mathematics I [3]*	D** 1P+1TA+1C***	T_1-R_1(.60) .7P+1TA	T_2-R_2(.30) .5P+.5TA	T_3-R_3(.20) .3P+.5TA	T_4-R_4(.10) .3P+.5TA
Mathematics II [3]			D-T_1-R_1(.60) .7P+1TA+1C	T_2-R_2(.30) .5P+.5TA	T_3-R_3(.10) .3P+.5TA
Fine Arts I [3]		D .7P+1TA+1C	T_1-R_1(.75) .5P+.5TA	T_2-R_2(.50) .3P+.5TA	T_3-R_3(.25) .3P+.5TA
Fine Arts II [6]			D-T_1-T_1(.60) 1P+1TA+1C	T_2-R_2(.30) .7P+1TA	T_3-R_3(.10) .7P+.5TA
Social Science [9]		D 1P+1TA+1C	T_1-R_1(.75) .7P+1TA	T_2-R_2(.50) .7P+1TA	T_3-R_3(.25) 1P+1TA
Communication [3]		D .5P+1TA+1C	T_1-R_1(.60) .5P+1TA	T_2-R_2(.30) .3P+.5TA	T_3-R_3(.10) .3P+.5TA
Linguistics [3]		D .5P+1TA+1C	T_1-R_1(.40) .3P+.5TA	T_2-R_2(.20) .3P+.3TA	T_3-R_3(.10) .3P+.5TA
Science I [4]			D-T_1-R_1(.75) .7P+1TA+1C	T_2-R_2(.50) .5P+.5TA	T_3-R_3(.25) .3P+.5TA
Science II [4]			D-T_1-R_1(.75) .7P+1TA	T_2-R_2(.50) .5P+.5TA	T_3-R_3(.25) .3P+.5TA
Children's Literature [3]			D-T_1-R_1(.75) .7P+1TA+1C	T_2-R_2(.50) .5P+.5TA	T_3-R_3(.25) .3P+.5TA
Total Personnel	1P+1TA+1C	3.4P+5TA+4C	6.3P+8.5TA+4C	4.6P+5.8TA	4.1P+5.5TA

*Bracketed numbers represent credit hour equivalency for each component.
**Top line figures represent: D=Initial Development; T-R=Test and Redevelopment; T_1-R_1=First Test and Redevelopment; (.45)=Estimated Redevelopment Index (materials only).
***Second line figures represent "full-time-equivalents" (FTE) for: P=Professor; TA=Teaching Assistant; C=Consultant.

TABLE 4:9 ADDITIONAL AUDIO-VISUAL EQUIPMENT FOR NATURAL SCIENCE SCHOLARLY MODES

Number of Items	Description of Items	Approximate Price	
14	Compound student microscopes	$100 each	$1400.00
14	Binocular dissecting microscopes	$130 each	$1820.00
3	Overhead Projectors	$200 each	$ 600.00
1	16mm movie projector	$400 each	$ 400.00
3	35mm slide projector	$125 each	$ 375.00
1	Master recording deck and transfer system	$450 each	$ 450.00
	TOTAL		$5045.00

Other equipment and specialized supplies and services will be needed as the component moves from description to operation. The development cost in addition to staff includes the production of a single prototype carrel package for each module and episode. A typical week of instruction generally will include 70 slides or still pictures, 10 pages of printed matter, 25 minutes of motion picture film, 90 minutes of audio-tape and 40 minutes of manipulation of concrete systems.

Variable cost data can be found for replicating these items; however, the ranges are sufficiently narrow to permit reasonable estimates. Table 4:10 gives figures for a 12 carrel system.

Tables 4:11, 4:12, 4:13 provide module analyses.

The projection of development sequences and personnel needs for the implementation of the Scholarly Modes of Knowledge Program are tabulated in Tables 4:8 and 4:14.

The projection of the physical resource needs for the implementation of the Scholarly Modes of Knowledge Program is tabulated in Table 4:15.

TABLE 4:10 PROPOSAL FOR 12 CARREL SYSTEM

Item	Number of Units	Initial Unit Cost	Initial Cost Total	Replication Unit Cost	Replication Cost	Total
70 slides	1400	$ .20	$ 280	$ .05	$ 840.00	$1120.00
10 pages copy	200	1.00	200	.02	480.00	680.00
25 min. Film	500	10.00	5000	.50	3000.00	3500.00
90 min. Audio	20	30.00	600	3.00	720.00	1320.00
*40 min. Unit	20	10.00	200	8.00	1920.00	2120.00
						$8740.00

*largely expendable item costs

TABLE 4:11 ANALYSIS OF EXAMPLE MODULES FOR DISCIPLINE DISTRICT

Discipline	Number	Percent
Biology	32	36.4
Physical Science	35	39.8
Earth Science	21	23.8
	88	100.0

TABLE 4:12 ANALYSIS OF EXAMPLE MODULES FOR PROCESS

Scientific Process	Number of Modules
Measuring	8
Estimating	3
Defining Operationally	5
Observing	21½
Ordering	3
Classifying	11
Communicating	3
Predicting	2½
Inferring	6½
Forming Hypothesis	2
Controlling Variables	1
Interpreting Data	5
Experimenting	4
Model Building	9
Undecided	2½

TABLE 4:13 ANALYSIS OF EXAMPLE MODULES FOR CLASS EXPERIENCE DISTRIBUTION

Class Experience		Number
Individual Work		28
Small Group		19
Large Group		37
	TOTAL	84

TABLE 4:14 PERSONNEL NEEDS FOR IMPLEMENTING SCHOLARLY MODES OF KNOWLEDGE

Personnel	Pre-implementation (6 months)		Years of Development							
			1		2		3		4	
	Persons	FTE*	Persons	FTE	Persons	FTE	Persons	FTE	Persons	FTE
Academic										
Professor			1	.5	2	1	2	1	2	1.6
Associate Professor			1	.5	4	2	3	1.6	3	1.5
Assistant Professor	1	.5	1	2.4	5	3.3	5	2	5	2
Graduate Assistants										
Level I	1	1	4	4	4	4	1	1	1	1
Level II			1	1	3	3	3.8	3.8	2	2
Level III					1.5	1.5	1	1	2.5	2.5
Secretary										
Grade III			1	.5	1	.5	1	.5	1	.5
Grade IV			1	1	1	1	1	1	1	.5
Grade V					1	.5	1	.5	1	.5
Technical Staff										
Laboratory and Media			1	1	1	1	1	1	1	1
Consultants	5 days		25 days		30 days		20 days		10 days	

*Full time equivalent except for Graduate Assistants who are only half-time.

TABLE 4:15 RESOURCE NEEDS FOR SCHOLARLY MODES OF KNOWLEDGE PROGRAM

Resources	Year of Implementation									
	.5 (6 months)		1		2		3		4	
	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor
Office Supplies (units)	2	100%	10	100%	25	100%	25	100%	25	100%
Telephones	1	100%	5	100%	11	100%	11	100%	11	100%
Paper (reams)	2	100%	10	100%	25	100%	25	100%	25	100%
35mm film (rolls)	--	---	30	100%	50	100%	50	100%	50	100%
Audio tape	--	---	20	100%	50	100%	50	100%	50	100%
Video tape	--	---	5	100%	10	100%	10	100%	10	100%
Art Supplies (units)	--	---	--	---	100	100%	100	100%	100	100%
Records (@$5.00)	--	---	10	100%	50	100%	25	100%	20	100%
Tape Recorder	--	---	1	50%	2	75%	2	75%	2	75%
VTR unit	--	---	1	25%	1	50%	1	50%	1	50%
Compound Microscope	--	---	--	---	14	50%	14	75%	14	75%
Binocular Microscope	--	---	--	---	14	50%	14	75%	14	75%
Overhead Projectors	--	---	1	25%	5	50%	5	75%	5	75%
16mm movie projector	--	---	--	---	2	50%	2	50%	2	50%
35mm slide projector	--	---	--	---	4	50%	4	75%	4	75%
Sciences instruction units	--	---	--	---	40	100%	40	100%	40	100%
Science slides	--	---	--	---	70	50%	70	50%	70	50%
Film Rental	--	---	--	---	20	100%	20	100%	20	100%
KLH Phono	--	---	--	---	1	50%	1	50%	1	50%
Nikon Camera	--	---	--	---	1	25%	1	25%	1	25%
Copy Lens	--	---	--	---	1	25%	1	25%	1	25%
135mm Lens	--	---	--	---	1	25%	1	25%	1	25%
28mm Lens	--	---	--	---	1	25%	1	25%	1	25%
Study carrels	--	---	--	---	50	50%	50	50%	50	50%
Wet carrels	--	---	--	---	12	50%	12	50%	12	50%
Lab Stations	--	---	--	---	14	50%	14	50%	14	50%
Computer time (hours)	1	100%	2	100%	3	100%	3	100%	3	100%
Key Punch	1	5%	1	10%	1	15%	1	10%	1	10%
Projection screens	--	---	--	---	3	50%	3	50%	3	50%
Portable Science (Demo.)	--	---	--	---	1	50%	1	50%	1	50%
Faculty Travel	1	---	5	---	11	---	11	---	11	---

Professional Use of Knowledge (Social Studies)

Introduction

This Social Studies section of the proposal is based on Volume II, Section VI, Pages 143-191, of the original BSTEP report. These pages explicate a model preservice social studies program to be developed as an integral element of the Professional Use of Knowledge aspect of the proposal.

How can this program be developed and implemented at Michigan State University? What resources are needed? What priorities need to be established regarding the allocation of these resources? What time schedule will best facilitate the implementation of this program? What provisions need to be made for program evaluation? These are but a few of the many compelling issues demanding resolution. The following pages attempt to provide realistic, defensible answers to these questions.

Part 1 gives a panoramic overview of the proposed social studies program by revealing the circumstances that prompted its development, its underlying theoretical rationale, and perceived strengths and weaknesses. Part 2 presents a series of long-range recommendations designed to insure that the program as originally conceived will achieve and maintain reality. Part 3, the final section of this report, explores significant next steps that will be needed to determine the feasibility of these recommendations.

Background and Rationale

The model program was based on the premise that the traditional, so-called "social studies methods course", as taught in the vast majority of institutions offering a teacher-education program is incapable of adequately preparing preservice teachers to teach the "New Social Studies" that is rapidly achieving reality in elementary classrooms throughout our nation. Typically such teacher-education courses possess these limitations:

1. Rarely do they cut across the social science disciplines by helping the prospective teacher integrate and apply the modes of inquiry and research findings of historians, geographers, economists, political scientists, sociologists, and anthropologists.

2. Prospective teachers have few opportunities to simultaneously apply the skills and knowledge taught in their methods courses.

3. There are limited opportunities for prospective teachers to design their own teaching aids and try them out in "live" classroom situations.

4. Few noteworthy attempts are made to integrate social studies methods courses with other experiences in teacher education.

5. College instructors of social studies methods courses are notoriously slow to incorporate innovative practices into their classes.

6. Few of these instructors gear their courses to the individual needs and aspirations of students.

7. These courses tend to be aimed toward students who plan on working with middle-class, white, suburban children; little attention is given to instructional problems involved in working with children who for various racial, ethnic, geographical or economic reasons might be termed "disadvantaged."

If traditional preservice "social studies methods" programs do possess these limitations, and if these limitations do seriously limit the effectiveness of graduates, then there is a compelling need for upgrading and revitalizing these programs, to make them relevant for their students, to make them consonant with the realities of teaching.

The model program was conceived with precisely this purpose in mind. The program began with the premise that an ideal preservice social studies program first of all, should prepare prospective techers to be students of society. To accomplish this objective, it was hypothesized that students will need to be sensitized to analytical skills and modes of inquiry that social scientists have developed and refined. Presumably, this repertoire of competencies will be acquired through the first two phases of the BSTEP, through General-Liberal Education and the Scholarly Modes of Knowledge, both of which include Social Science.

The second major premise was that by the time the student reaches Professional Use of Knowledge, he is ready to transfer knowledge and skills acquired in other areas to the elementary classroom. At this point he is placed in actual and simulated classrooms where he is exposed to the myriad decisions normally confronting the elementary social studies teacher. Not only is he sensitized to the dynamics of decision-making as they impinge on planning, implementing and evaluating instruction, but he receives actual experience in making these decisions.

The original proposal provided for a wide variety of instructional settings to facilitate these processes, including actual and simulated classroom encounters, micro-teaching, auto-tutorial projects, and various types of laboratory and field experiences. Throughout this process various roles are assigned to the professor. At times he is an organizer, an arranger of learning experiences; often he is a resource person, who uses his expertise in helping college students resolve specific instructional problems in working with elementary pupils; at other times he is an evaluator, a diagnostician charged with ascertaining the extent to which his students are attaining the competencies prescribed by the program.

As with other portions of BSTEP, the modular approach is a means of specifying, organizing, and classifying integral, nuclear elements of the social studies program, as they related to Professional Use of Knowledge. Some 80 illustrative modules have been developed, each specifying how a given behavioral objective might be taught in a given instructional situation. These modules were organized in four interrelated categories that were hypothesized as constituting the major spheres or processes of decision-making confronting the elementary social studies teacher; these spheres fell into a cyclical arrangement, with one flowing into another, as indicated below:

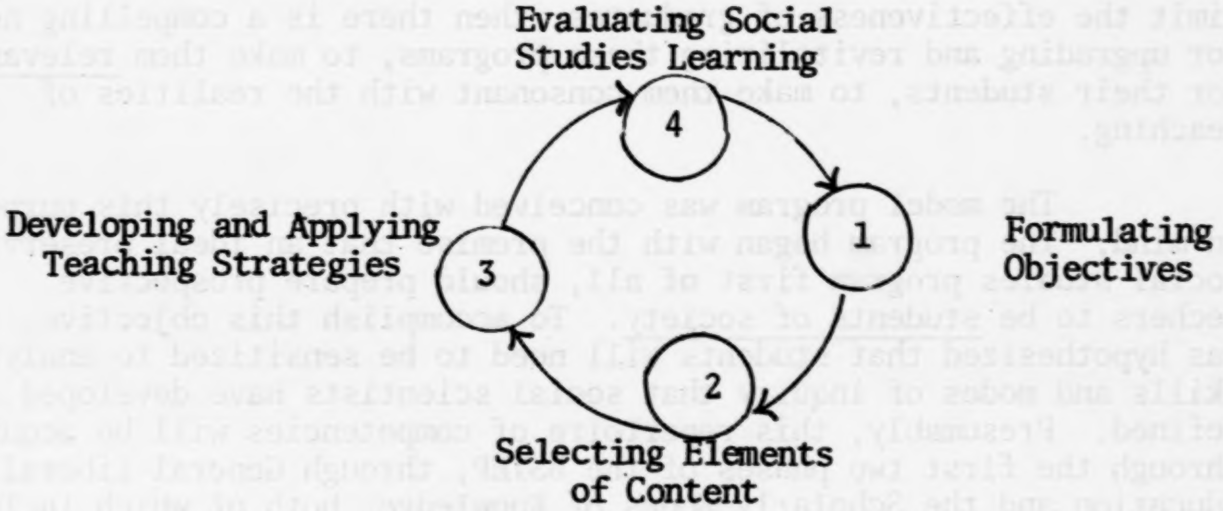

Figure 4:1 Cyclical Flow of Major Spheres

The processes are self-renewing, in the sense that they continue to operate cyclically throughout any instructional situation. Once the professor has conceptualized a given module using the four processes, empirical evidence based on his students' achievement will govern his decision to move them ahead to the next module or to have them repeat the module. He may wish to go back and restructure, refine, or rearrange the module. In this way the total social studies program can be constantly renewed, redirected, and restructured, depending on perceived needs of students.

Recommendations

In retrospect, the program developed for the Professional Use of Knowledge-Social Studies component of BSTEP possesses many potential strengths and weaknesses, some of which are already manifest. These need to be weighed carefully before the feasibility of implementing the program can be explored.

At this point, the program appears to possess these major strengths:

1. The program requires the student, or preservice teacher to assume the major responsibility for his learning.

2. The student proceeds through the program at his own rate, with achievement determined primarily on the basis of his performance in mastering modules.

3. The program enables the student to become thoroughly sensitized to the realities of social studies teaching.

4. The content for the program is predicated upon a 4-phase decision-making model that accurately reflects the actual decisions confronting elementary social studies teachers.

5. Students are afforded maximum opportunities to develop their own teaching materials and teaching styles; and to validate them under actual and simulated classroom conditions.

6. The program provides many opportunities for achieving integration between the social studies and other components of BSTEP.

7. Instructors are given maximum opportunities to grow professionally through the program, through their associations with students, elementary school personnel and with other colleagues associated with BSTEP.

Potential weaknesses that individually or collectively may seriously impair the effectiveness of the program are:

1. The social studies program is but one of five components of the Professional Use of Knowledge. The extent to which a student can successfully complete a given number of modules in each component becomes a potential problem, one that underscores the need for achieving unity and balance between these components.

2. The modules developed to date for social studies do not measure up to our expectations. In some instances, the objectives are not stated as behaviorally as they might have been. Time limits prescribed for completion of the modules may be unrealistic and, most important of all, provisions for evaluation tend to lack clarity and specificity. This is particularly true in the case of modules dealing with the affective domain of learning.

3. Nor are we satisfied with the sequential order of the modules. It is entirely possible that these modules will need to be rearranged for various types of students.

4. The program cannot succeed unless resources of local communities are readily available. For example, not only will our preservice teachers need access to elementary classrooms, but they also will need cooperation of community agencies, business firms, law enforcement officials, mass media, and other local institutions that are potential contributors to social studies instruction in the schools. Marshalling these resources is a difficult task, but a prime requisite for a successful program.

Steps to Implementation

The preceding discussion suggests several important steps to be taken in determining the feasibility of Professional Use of Knowledge-Social Studies:

1. Immediate analysis of the social studies program is needed in terms of its relationship to other program components of Professional Use of Knowledge and the extent to which each component competes for the time and energies of students.

2. A careful, penetrating analysis of modules should be made to clarify and refine them, and add or delete modules as needed. In addition, several module sequences should be developed for students intending to teach in the inner city, rural areas,

and suburbia. It is likely that these three tracks would be markedly different, and a restructuring of the modules should accomodate these differences.

3. A thorough analysis of available resources ought to be made to encompass not only the University community, but also the communities where students will be assigned for their Clinical Experiences.

4. As early as possible decisions need to be made regarding the degree of emphasis that will be given to Professional Use of Knowledge-Social Studies vis-á-vis other elements of BSTEP, and vis-á-vis other teacher-education programs at this university. The priorities involved here should be established at key divisional and university levels.

5. Of greatest importance is the need for establishing a defensible, comprehensive program of continuing evaluation. Ideally, this should be a two-dimensional undertaking, involving evaluation via internal and external means, and allowing continuous appraisal by individuals within the program, and by an outside agency.

Table 4:16 illustrates the projected developmental sequences for Professional Use of Knowledge.

Personnel, Facilities and Materials

The projection of personnel needs for the implementation of the Professional Use of Knowledge Program is tabulated in Table 4:17.

The projection of the physical resource needs for the implementation of the Professional Use of Knowledge Program is tabulated in Table 4:18.

TABLE 4:16 PROJECTED DEVELOPMENTAL SEQUENCES WITH CORRESPONDING PERSONNEL NEEDS FOR PROFESSIONAL USE OF KNOWLEDGE

Components	Pre-implementation (6 months)	Year of Implementation (September-August)			
		First	Second	Third	Fourth
Mathematics [3]*	none		$D\text{-}T_1^N\text{-}T_1(.60)$ .7P+1TA+1C	$T_2\text{-}R_2(.30)$ .5P+.1TA	$T_3\text{-}R_3(.10)$ .3P+.7TA
Reading [3]	none		$D\text{-}T_1^N\text{-}R_1(.60)$ .5P+1TA+1C	$T_2\text{-}R_2(.30)$ .5P+.1TA	$T_3\text{-}R_3(.10)$ .3P+.7TA
Social Science [3]	none	D** .5P+1TA+1C***	$T_1\text{-}R_1(.60)$ .5P+1TA	$T_2\text{-}R_2(.30)$ .3P+1TA	$T_3\text{-}R_3(.10)$ .3P+.7TA
Natural Science [3]	none		$D\text{-}T_1^N\text{-}R_1(.60)$ .5P+1TA+1C	$T_2\text{-}R_2(.30)$ .5P+1TA	$T_3\text{-}R_3(.10)$ .3P+.7TA
Language Arts	none	D .5P+1TA+1C	$T_1\text{-}R_1(.60)$ .5P+;TA	$T_2\text{-}R_2(.30)$ .3P+1TA	$T_3\text{-}R_3(.10)$ .3P+.7TA
Total Personnel	none	1P+2TA+2C	2.7P+5TA+3C	2.1P+5TA	1.5P+3.5TA

*Bracketed numbers represent credit hour equivalency for each component.

**Top line figures represent: D=Initial Development; T-R=Test and Redevelopment; $T_1\text{-}R_1$=First Test and Redevelopment; T^N=Test with Non-BSTEP Students; (.45)=Estimated Redevelopment Index (materials only).

***Second line figures represent "full-time equivalents" (FTE) for: P=Professor; TA=Teaching Assistant; C=Consultant.

TABLE 4:17 PERSONNEL NEEDS FOR PROFESSIONAL USE OF KNOWLEDGE

Personnel	Pre-Implementation .5 (6 months)		Years of Implementation 1		2		3		4	
	Persons	FTE*	Persons	FTE	Persons	FTE	Persons	FTE	Persons	FTE
Academic										
Professor					1	.7	1	.5	1	.3
Associate Professor			1	.5	2	1	2	.6	2	.6
Assistant Professor			1	.5	2	1	2	1.5	2	.6
Graduate Assistant										
Level 1			2	2	2	2	1	1	1	1
Level II					3	3	2	2	1	1
Level III							2	2	1.5	1.5
Secretary										
Grade III			1	.5	1	.5	1	.5		
Grade IV					1	.5	1	.5	1	.5
Grade V									1	.5
Technical										
Media					1	.5	1	.5	1	.5
Consultants			10 days		20 days		15 days		10 days	

*Full-time equivalent, except graduate assistants who are appointed half-time only.

TABLE 4:18 RESOURCE NEEDS FOR PROFESSIONAL USE OF KNOWLEDGE PROGRAM

	Pre-implementation (6 months)		Year of Implementation							
			1		2		3		4	
Resources	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor	Quantity	Utility Factor
Office Supplies (units)	--	---	4	100%	10	100%	10	100%	10	100%
Telephones	--	---	2	100%	5	100%	5	100%	5	100%
Paper (reams)	--	---	4	100%	10	100%	10	100%	10	100%
35mm film (rolls)	--	---	20	100%	30	100%	30	100%	30	100%
Audio tape	--	---	10	100%	25	100%	25	100%	25	100%
Video tape	--	---	5	100%	25	100%	25	100%	25	100%
Science Instruction Package	--	---	--	---	100	100%	100	100%	100	100%
Science Demo. (units)	--	---	--	---	10	100%	10	100%	10	100%
Computer time	--	---	2	100%	3	100%	3	100%	3	100%
Key Punch	--	---	1	5%	1	10%	1	10%	1	10%
Film Processing	--	---	--	---	--	---	--	---	--	---
Nikon Camera	--	---	1	10%	1	25%	1	25%	1	25%
Copy Lens	--	---	1	10%	1	25%	1	25%	1	25%
135mm Lens	--	---	1	10%	1	25%	1	25%	1	25%
28mm Lens	--	---	1	10%	1	25%	1	25%	1	25%
Tape Recorder	--	---	1	20%	1	50%	1	50%	1	50%
VTR Unit	--	---	1	25%	1	50%	1	50%	1	50%
16mm projector	--	---	--	---	1	25%	1	25%	1	25%
35mm projector	--	---	--	---	1	25%	1	25%	1	25%
Overhead projector	--	---	--	---	3	50%	3	50%	3	50%
Study carrel	--	---	--	---	50	50%	50	50%	50	50%
Wet carrel	--	---	--	---	12	50%	12	50%	12	50%
Lab Stations	--	---	--	---	14	33%	14	33%	14	33%
Projection Screens	--	---	--	---	3	50%	3	50%	3	50%
Transparencies (boxes)	--	---	--	---	5	100%	5	100%	5	100%
Film rental	--	---	--	---	10	100%	10	100%	10	100%
Faculty travel	--	---	2	---	5	---	5	---	5	---

Chapter 5

INSTRUCTIONAL RESOURCES SUPPORT SYSTEM

Introduction

The plan for the BSTEP Instructional Resources Support System (IRSS) is in part an outgrowth of Michigan State University faculty work for nearly twenty years with existing MSU instructional media resources. Included in these resources is the Instructional Media Center[1], an agency servicing the total campus and housing one of the major film libraries in the state. Films, equipment and operators are available to enhance instruction throughout the campus. A graphics center is available to any department on campus on a fee basis. Still and motion film production laboratories are part of the teaching and servicing facility.

The extensiveness of the Instructional Media Center as it relates to the total campus is a proven resource that the BSTEP IRSS has no need or intention of duplicating.

Instructional tasks in the BSTEP program are to develop teachers of children and youth. These specifications are different from the general needs of university instruction in a variety of ways, as detailed in other segments of the BSTEP report. As these differ, a Learning Resources Center restricted to the BSTEP program becomes a necessary major component of the Instructional Resources Support System. BSTEP emphasizes the teacher as a stimulator of learning rather than an instructor per se. In this manner the Learning Resources Center emphasizes learning over instruction. The whole Instructional Resources Support System will comprise the existing facility of the Instructional Media Center, the proposed BSTEP Learning Resources Center, and the Clinic-School Network (a proposed network of Michigan Public Schools cooperating with the University in various phases of the Clinical program, part of which is already in operation).

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[1] The Instructional Media Center, Closed Circuit Television, Science and Mathematics Teaching Center, The College of Education Instructional Resources Center and the USOE-MSU Regional Center for Instructional Materials for Handicapped Children and Youth are all described more completely in the last section of this chapter.

In the scheme developed in this study, the BSTEP Learning Resources Coordinator is directly responsible to the BSTEP director. One of the coordinator's major functions is to bring together personnel and materials to implement the various BSTEP experience modules. Instructional Development Teams are composed of experts in the disciplines represented in several components, as in General-Liberal Education team members are representatives of humanities, social science and science. Each team would be augmented by a consultant whose specialty is media and whose main function is to advise or suggest effective implementation of program goals through appropriate media. The Instructional Development Teams will need to be involved in locating, examining and assessing existing materials and in developing new materials.

Coincidental with the development of materials is the need for Faculty In-Service Education to permit faculty to fully understand the multi-media potential in instructional settings. Thus, one of the most important functions of the BSTEP Learning Resources Center emerges as the support of faculty in their implementation of BSTEP through 1) defining purposes and potentials of multi-media and 2) coordinating development, selection, and use of media for the separate modules.

To accommodate the total IRSS program, a central on-campus facility is planned for the Learning Resources Center. It will serve as the home base for a limited number of functions. The Learning Resources Center will house center staff who will work with faculty and students. Work space is planned for faculty who are assessing existing material, planning and developing new materials or evaluating programs. Facilities for student use include carrels used in simulation and auto-tutorial experiences in some aspects of Clinical Experiences and Professional Use of Knowledge, rooms for media use with small groups, and a demonstration classroom. The collection of children's trade books and textbooks will be housed in the Learning Resources Center, as well as a complete collection of instructional aids developed in innovative curriculum programs.

One notable IRSS exclusion restricts the bringing of children to campus for micro-teaching or group instruction to very limited circumstances. It is felt by the Instructional Resources Task Force that those phases of the Clinical Experiences involving children in school settings should be carried out in school settings. The non-simulated clinical phase for the BSTEP preservice teacher is best handled in the off-campus setting of an elementary school.

The Learning Resources Center coordinator serves as materials liaison between the Instructional Development Teams and the Clinic-School Network. Working under supervision of the Director of BSTEP the coordinator can request or initiate cooperative ventures with such existing facilities as the Instructional Media Center, Closed Circuit Television, and others. (See Figure 5:1)

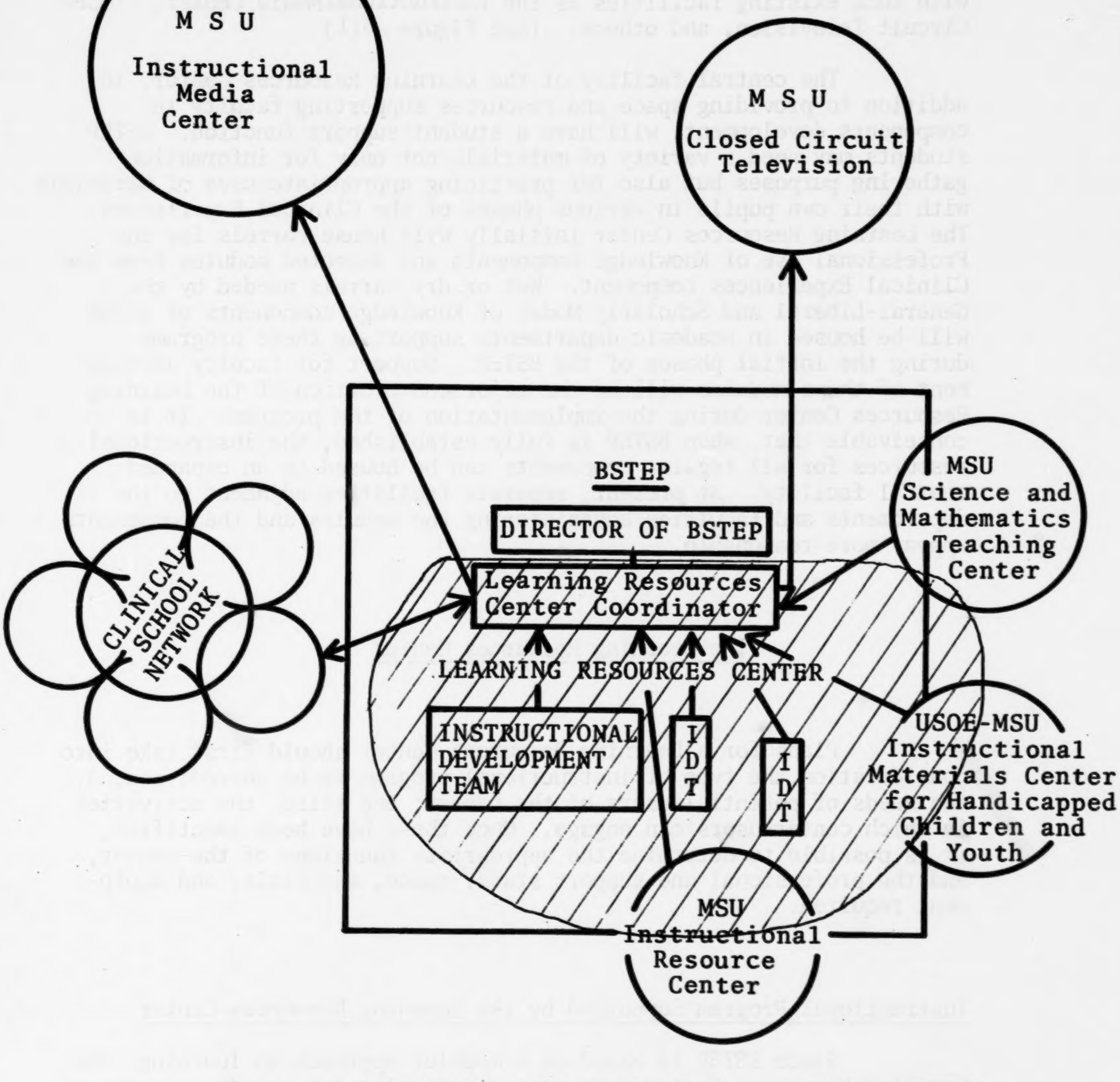
The central facility of the Learning Resources Center, in addition to providing space and resources supporting faculty in components development, will have a student-support function. BSTEP students may need a variety of materials not only for information-gathering purposes but also for practicing appropriate uses of materials with their own pupils in various phases of the Clinical Experiences. The Learning Resources Center initially will house carrels for the Professional Use of Knowledge components and selected modules from the Clinical Experiences component. Wet or dry carrels needed by the General-Liberal and Scholarly Modes of Knowledge components of BSTEP will be housed in academic departments supporting these programs during the initial phases of the BSTEP. Support for faculty development of these modules will be the major contribution of the Learning Resources Center during the implementation of the program. It is conceivable that, when BSTEP is fully established, the instructional resources for all regular components can be housed in an expanded central facility. At present, separate facilities adjacent to the departments and faculties administering the modules and the components appear more reasonable.

The Learning Resources Center

Plans for a Learning Resources Center should first take into consideration the type of instructional program to be served; second, the needs of potential users of the center; and third, the activities in which center-users can engage. Once these have been identified, it is possible to determine the appropriate functions of the center, and the professional and support staff, space, materials, and equipment required.

Instructional Program Supported by the Learning Resources Center

Since BSTEP is based on a modular approach to learning, the Learning Resources Center must support the planning and development of the required instructional modules with staff, appropriate combinations of commercially and locally-prepared materials, equipment for producing


M S U
Instructional
Media
Center
M S U
Closed Circuit
Television
BSTEP
DIRECTOR OF BSTEP
Learning Resources
Center Coordinator
LEARNING RESOURCES CENTER
INSTRUCTIONAL
DEVELOPMENT
TEAM
I
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CLINICAL
SCHOOL
NETWORK
MSU
Science and
Mathematics
Teaching
Center
USOE-MSU
Instructional
Materials Center
for Handicapped
Children and
Youth
MSU
Instructional
Resource
Center

Figure 5:1 Relationship of Learning Resources Center, BSTEP, to other Facilities in the Instructional Resources Support System.

materials, and space and facilities for using the finished modules. The predominantly clinical approach to teacher education inherent in BSTEP necessitates a center where prospective teachers, throughout their preparation program, can review, select, try out, and evaluate materials for specific purposes, redesigning instructional sequences to fit their own needs while they learn how to utilize materials with increasing skill. A standard procedure for choosing instructional media is essential. Briggs, Gagné and May offer steps in the procedure:

1. State the behavioral objectives for the course or unit of instruction in the sequence in which they should be taught

2. For each objective, identify the type of learning involved

3. Using the required conditions of learning as a guide, design a "media" program for each objective which lists the instructional events, identifies the characteristics of the required stimuli, and states the acceptable media options

4. Prepare a summary of the media options for a group of objectives making up a sequence of instruction, and scan these to identify frequently occurring media options

5. Assign the media in which the instruction should be packaged to achieve the best trade-off in respect to effective stimulus display, convenience in changing from medium to medium, and economy in terms of size of unit in which each sequence is to be prepared in the given media

6. Write specifications for the preparation of the instruction by the various media producers[2]

Needs of potential users of the Learning Resources Center

The following are the potential users of the BSTEP Learning Resources Center:

BSTEP faculty members. Needs are based on use of a broader variety of unique and innovative materials than the traditional program. Faculty members will need easy access to the required materials if the success of the program is to be assured. Faculty members are considered to be not only those who teach components on campus, but also those faculty members of Clinic-School Network who assist prospective teachers with clinical experiences in the schools.

---

[2] Leslie J. Briggs, Robert M. Gagné, and Mark A. May, "A Procedure for Choosing Media for Instruction," Instructional Media: A Procedure for the Design of Multi Media Instruction, A Critical Review of Research, and Suggestions For Future Research, (Washington, D.C. U.S. Department of Health, Education, and Welfare, 1967, pp. 28-29).

BSTEP students. A variety of materials will be needed for information-gathering purposes and for practicing appropriate uses of materials with their own pupils. BSTEP students must have ready access to materials on campus and in the cooperating school systems in which they engage in internship and other clinical experiences.

Instructional Development Teams. It is proposed that each of the five major areas of the BSTEP program such as Scholarly Modes of Knowledge have a planning team responsible for development of the proposed instructional modules and that each team consist of:

1. Representative faculty members knowledgeable in the component

2. A team instructional development consultant knowledgeable in the discipline and also having or gaining expertise in the media field

It is further proposed that the component team work with The Learning Resources Coordinator and appropriate members of a materials-production staff in developing instructional modules. The Instructional Development Teams will need access to previously developed materials and to space in which support staffs can plan and produce additional materials.

Learning Resources Center Staff. A fourth group of potential users of the BSTEP Learning Resources Center is the staff. The following types of staff members should be considered:

1. A center coordinator with training and experience in the media and teacher-education, this person will have responsibility for:

   a. Coordination of all LRC services

   b. Assisting faculty in developing materials for the BSTEP modules

   c. Assisting faculty in developing and implementing faculty in-service program as it relates to instructional media

2. Consultants with training and experience in teacher education and media-materials who will serve as media specialists with Instructional Development Teams in readying modules for implementation.

3. Support production staff as required

4. Other support staff such as clerks, graphics specialists, graduate assistants, and student help

Activities in which Learning Resources Center users should be able to engage

The instructional program for the BSTEP Learning Resources Center suggests that users should be able to engage in the following activities:

BSTEP faculty

1. Procure and use the commercially- and locally-produced materials necessary for achieving instructional objectives

2. Learn to operate multi-media equipment necessary for producing and using media in college classroom demonstrations and auto-tutorial instruction

BSTEP Instructional Development Teams

Identify teaching strategies, content and media types necessary for helping faculty achieve their instructional objectives

BSTEP Instructional Development Consultants and Materials Staff

Select commercially-prepared examples necessary for helping faculty achieve their instructional objectives

BSTEP Instructional Development Consultants and Production Teams

Design locally-produced media for helping faculty achieve their instructional objectives

BSTEP Production Teams

Produce media necessary to assist staff in achieving instructional objectives

BSTEP Students

1. Learn to operate audio-visual equipment necessary for self-instruction and for producing and using media in demonstrating in public school classes

2. Use self-instructional materials assigned by professors

3. Respond to simulated instructional sequences and receive feedback on the appropriateness of their responses

4. Observe and evaluate instructional situations by means of video-tape

5. Produce video and audio-tapes to demonstrate procedures for assisting their pupils in developing skills

6. Investigate, preview, select, plan, evaluate, and redesign procedures for materials related to instructional objectives

7. Produce and evaluate simple teacher-made materials for achieving instructional objectives

8. View and evaluate new instructional materials and equipment

9. Demonstrate materials in college classes to fellow students

Proposed Functions of the BSTEP Learning Resources Center and Their Implications for Space Requirements

Functions	Space Requirements
Administration of the following should be in the BSTEP Learning Resources Center: 1. The materials collection 2. The instructional development-materials production program 3. The student support program for BSTEP Students in Professional Use of Knowledge and segments of Clinical Experience 4. The Faculty In-service program as it relates to instructional resources	Offices for the coordinator, Instructional Development Teams Consultants, secretary, supporting staff members

The Materials Collection

1. To coordinate development of the collection	Preview rooms for groups to 15 people (can double as conference and seminar rooms if necessary)
a. To plan and implement procedures for working with BSTEP staff, intern consultants, and students in selection of a wide variety of print, audio-visual, and curriculum materials for the center	Carrels equipped with electricity and audio-visual equipment for individual previewing (can be shared with students previewing materials for use in classes)
b. To provide space, facilities, and staff for organizing the collection in such a way as to enable BSTEP faculty and students to accomplish their purposes	
1) Storage and cataloging of materials	A large, open area in which students can browse and read; shelves for book storage, files for pictures and transparencies, cabinets for filmstrips, records, and tapes; adjustable shelves for models and realia; materials to be grouped for access

Functions	Space Requirements
	Display areas along one side for use in featuring new materials
	A room to house reserve materials; for cataloging, ordering and receiving new acquisitions
2. Scheduling and charge-out of materials	A staffed charge-out desk with space for book-scheduling procedures and for Kardex cabinets for scheduling materials requested in advance of the use date, such as audio-visual materials
3. Maintenance of materials	A room to which materials are returned after use, these materials to be checked in, run through by the film editor or otherwise inspected, and repaired if necessary
4. Inventory materials	Space for inventory records
The Instructional development-materials Production Program	
1. To coordinate planning and development of materials required by the faculty to achieve stated objectives of BSTEP	Space for two planning team units to consult with production staff members; a desk for each Instructional Development Team Consultant in the Learning Resource Center
a. To provide a Consultant to work with each Instructional Development Team in	It is assumed that the consultant and team will wish to do their initial planning in their own departments
1) Assisting to identify behavioral objectives	
2) Assisting in selection of appropriate instructional strategies (large group, seminar, individualized instruction)	
3) Selecting appropriate media and equipment such as film clips, video tapes	A preview room (one of those described in The Materials Collection, Section 1.a.)

4) Assisting in evaluation of instruction on the basis of achievement of objectives	
5) Assisting in redesigning instruction for better achievement of objectives	
b. To provide an Instructional Development Team Consultant to work with the media production staff in designing the specific media examples required for achieving team objectives	A team planning area (see Instructional Development)
c. To provide in-service training in media for the IDT consultant (Note: it is assumed that this person will have expertise in the subject area(s) for which programs are to be developed, his competence making it possible for him to communicate effectively with the team. If he does not have media background, he may require this to be able to communicate with the media teams)	Learning Resources Center facilities used for short institutes and for intern experiences in multi-media
d. To provide production teams to supplement those in the University IMC, to develop media examples planned with the team consultant	A studio for preparing videotapes of groups to supplement the present closed-circuit system
	Graphics studio with equipment required to supplement the present university IMC facilities, such equipment to be used in lettering, dry mounting, and laminating materials, preparing illustrations, producing transparencies, providing objects and models
	A woodworking shop to supplement the present university IMC facilities, to be used in preparing display boards, exhibits, etc.

Functions	Space Requirements
	(Note: It should be understood that there is no intention of duplicating present facilities or staff but only to supplement them as required by the BSTEP Program)
e. To provide space, facilities, and professional assistance to BSTEP students in planning, producing, trying-out, and evaluating simple teacher-produced instructional materials for use in demonstrations in college classrooms and public school classrooms	A large laboratory with simple production equipment such as thermofax machines and dry mounting equipment, with ample work and storage space for student projects, displays of student projects, and with a professional consultant to further students' discovery of appropriate media for reaching instructional objectives
Student Support Program for BSTEP in Professional Use of Knowledge and in Segments of Clinical Experiences	
1. To coordinate individualized or small-group teacher education experiences with media	
a. Learning equipment operation	Carrels permitting students to learn operation of motion picture equipment, filmstrips, opaques, overheads, and slide projectors; tape recorders; thermofax transparency machines, dry mount presses, laminating machines, diazo transparency machines, and lettering equipment. These would be assigned permanently to this operation
b. Gaining familiarity with new instructional materials and equipment	One carrel set up at all times with new equipment items such as Language Masters or Standard Programmers, these being changed at least once a month (might be several of those described under The Materials Collection)

Functions	Space Requirements
c. Viewing films, filmstrips, transparencies, slides, and multi-media kits; auditing records, tapes, and Language Master cards for possible use in college or public school classrooms	Carrels equipped with electricity and A-V equipment for individual viewing (same ones as described in The Materials Collection)
d. Use of self-instructional programs	Carrels permitting students to view multi-media self-instructional programs assigned by BSTEP professors
e. Simulation experiences	Partially-enclosed carrels permitting students to view and respond covertly to simulated segments of classroom activity, after which they check responses against those indicated by the program
	Booths for students to view simulated segments of classroom activities, respond (the response being video-taped), and evaluate with assistance of an instructor. These booths would be part of the six soundproof 6' x 8' space booths described below
f. Producing a video-tape and audio-tapes of oneself, or viewing a video-tape of classroom situations	Soundproof booths (6' x 8') in which either individuals or groups up to five can: View and evaluate classroom instructional situations Video-tape themselves practicing instructional sequences Audio-tape themselves practicing instructional sequences
g. Micro-teaching	One small classroom permitting a student to do micro-teaching, have it video-taped, and evaluate it with the assistance of an instructor. This can be the same classroom as used for

Functions	Space Requirements
	display-conference as described in Faculty In-service below (Note: It is assumed that micro-teaching usually will occur in a public school)

The Faculty In-Service Program as it Relates to Instructional Resources

1. To facilitate Faculty In-Service of BSTEP as it relates to Instructional Resources

a. To help BSTEP faculty be aware of new media and techniques pertinent to their areas	A display-conference room demonstration classroom for faculty, featuring new materials and equipment for different components
b. To consult with faculty members on materials problems	LRC staff members' offices for individual conferences; group conference rooms (mentioned in The Materials Collection)
c. To provide in-service activities to assist diciplines teams in developing and using modules involving media, such in-service to be provided on a request basis	Previously-described space used by students

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Recommendations

Implicit in this report is the need for a BSTEP Learning Resources Center, centrally located on campus, separate from the University Instructional Media Center, or any other learning resources centers.

Some of the other facilities should allow BSTEP use, some should be combined with Learning Resources Center to make greater use of facilities, and others left as they are (see the last section of this chapter for greater details). A budget, a sense of committed cooperation across department lines, and an intensive faculty educational program in the use of media can make the proposed scheme operational.

It is recommended that Instructional Development Teams from each of the five major areas, Clinical Experiences, Human Learning, and Professional Use of Knowledge, General-Liberal Education, Scholarly Modes of Knowledge, be assigned on a released-time basis to have responsibility for developing instructional media for proposed modules. The teams would comprise faculty knowledgeable in the disciplines and an instructional development consultant.

An overall Learning Resources Coordinator should be appointed. This person would be responsible to the Director of BSTEP and would serve as liaison between Instructional Development Teams, the Clinic-School Network, The Instructional Media Center, Closed Circuit TV, and other facilities. In addition to the Learning Resources Center Coordinator, the following positions are recommended for staffing the LRC:

1. Library Technician, to supervise the cataloging and use of materials in the LRC
2. Three media specialists serving as Instructional Development Team Consultants to work with component teams
3. Two media production technicians to assist in developing media for instructional purposes as proposed by Instructional Development Teams
4. Secretarial and clerical support staff

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BSTEP Minimum Requirements in Space, Equipment, Materials and Finances for Learning Center on Campus

Full implementation of the Learning Resources Center would be spread over a four-year period. As a hundred students are to be admitted to BSTEP each year, use of facilities will mount rapidly during Implementation Phases 1 and 2 of the program. However, essential facilities will need to be established during the Pre-implementation Phase to aid Instructional Development Teams and to ready modules for use. Therefore, the following estimates are proposed for the Learning Resources Center, with the increment of students taken into account as well as the peak time when a given facility must be available.

Assuming BSTEP would start with a nucleus of materials currently on hand and items immediately available, a total of 6,000 original and duplicate items can be accumulated within two years of actual operation. This material, with ready access to professors, staffs and 100 students would require space and equipment.

BSTEP Information Retrieval Costs Including Question/Answer Service to BSTEP Students and Faculty

Initially the task force planned to incorporate an information retrieval service for students and faculty complete with question and answer service as it relates to multi-media available in either the Learning Resources Center or in off-campus centers. The task force investigated the system. Figures based upon the experience of Special Education faculty in the USOE-IMCHCY (see below) are available to interested parties. The task force concludes the values derived from such a system were not commensurate with the cost involved. If funds were available, a computer-based retrieval system for instructional materials would be desirable.

TABLE 5:1 INSTRUCTIONAL RESOURCES IMPLEMENTATION

FACILITY	PRE-IMPLEMENTATION PHASE	YEAR 1	YEAR 2	YEAR 3	YEAR 4
1. Office space Learning Resources Center staff	11 offices (1,500 sq. ft.)				
2. Production area for Learning Resources staff and IDT and later students	1,000 sq. ft.				
3. Team planning space	400 sq. ft.				
4. Display-Conference room - Demonstration Classroom 20' x 20'			Outfit demonstration classroom 4,000 sq. ft.		
5.*Carrels for BSTEP auto-tutorial instruction and preview of instructional materials by faculty, students	10 carrels	add 20 (sub-total=30)	Add 10 (sub-total=40)	Add 10 (sub-total=50)	Add 10 (total=60 at end of 4 years)
6.*Carrels for permanent self-instruction in multi-media	2	add 2 (sub-total=4)	add 6 Total - 10		
7. Partially enclosed carrels for responding to simulation experiences	-				

*Multi-media carrels will be permanently established, and since a given student would experience this instructional program only once, the use factor can be concentrated. Ten carrels would suffice for 100 students, which would be the maximum at any one term. If admissions were increased in any one level additional carrels would be required.

TABLE 5:1 (cont.) INSTRUCTIONAL RESOURCES IMPLEMENTATION

FACILITY	PRE-IMPLEMENTATION PHASE	YEAR 1	YEAR 2	YEAR 3	YEAR 4
8. Small rooms for preview, discussion groups up to 15 persons 10' x 12' (total 420 sq. ft.)	2	add 2 Total 4	-	-	-
9. 6' x 8' soundproof rooms for video-, audiotaping and viewing by a maximum of 5 persons (total 300' sq. ft.)	-	6	-	-	-
10. Reading-browsing space - (including carrel space)	-	5,000 sq. ft.	-	-	-
11. Check-out desk and space	-	100 sq. ft.	-	-	-
12. Material storage and catalog space	-	300 sq. ft.	-	-	-
13. Wood working shop - faculty-student designed instructional aids	400 sq. ft.	-	-	-	-

*For each group of 200 patrons, of which the majority are students, add 2,000 sq. ft. to the various functional areas to maintain minimum service

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BSTEP Learning Resources Center Requirements

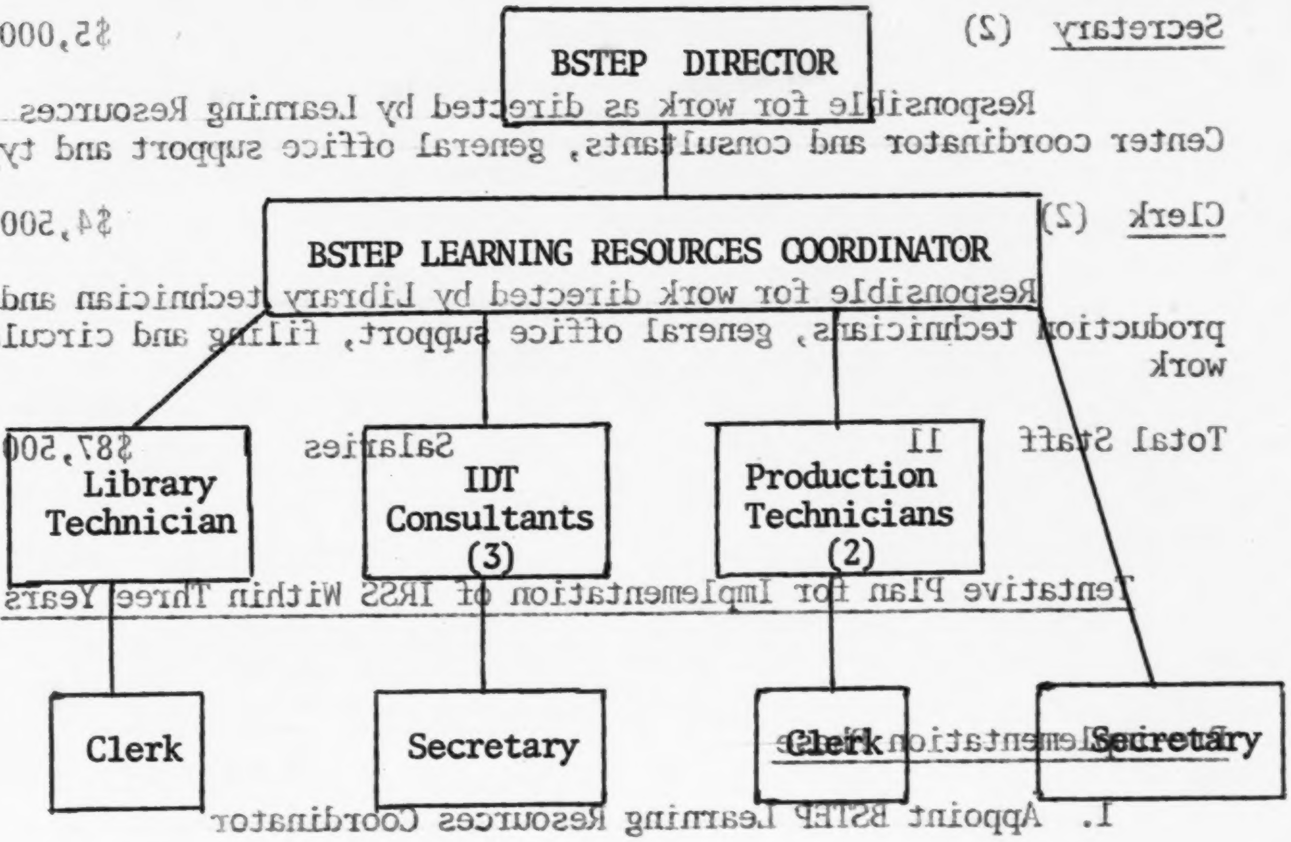
BSTEP DIRECTOR
BSTEP LEARNING RESOURCES COORDINATOR
Library Technician
IDT Consultants (3)
Production Technicians (2)
Clerk
Secretary
Clerk
Secretary

Figure 5:2 Organizational Plan

__BSTEP Learning Resources Center Coordinator__ - M.L.S. or M.A. - $12,000

Responsible for administration and operation of the BSTEP-LRC Supervise and monitor activities to coordinate all aspects of the operation

__Library Technician__ B.S. $7,500; M.A. $9,000

Responsible for acquiring and organizing materials in the Learning Resources Center. Assist in references and bibliographic responsibilities as initiated by faculty and students

__Instructional Development Team Consultant__ (3) M.A. in media $11,000

Fully knowledgeable in multi-media purposes, potentials and techniques. Responsible for assisting BSTEP faculty in developing modules in best media format

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Media Production Technician - B.A. or equivalent (2) $7,500

Skilled in graphics, photography, and/or commercial art or advertising. Responsible for production of media materials for BSTEP faculty.

Secretary (2) $5,000

Responsible for work as directed by Learning Resources Center coordinator and consultants, general office support and typing

Clerk (2) $4,500

Responsible for work directed by Library technician and production technicians, general office support, filing and circulation work

Total Staff 11 Salaries $87,500

Tentative Plan for Implementation of IRSS Within Three Years

Pre-implementation Phase

1. Appoint BSTEP Learning Resources Coordinator

2. Appoint Instruction Development Teams in the General-Liberal, Scholarly Modes of Knowledge and Human Learning Components, released full-time for two terms to prepare materials and ready modules for implementation

3. Appoint IDT Consultants to work with Instructional Development Teams

4. Initiate In-Service Education in instructional resources for all participating BSTEP faculty

5. Appoint production technicians to assist in readying modules for implementation

6. Employ 1 secretary and 1 clerk

7. Establish housing for Learning Resources Center care staff cited above, and for work space for ID Teams and consultants

Implementation Phase-First Year

1. Continue with all of Pre-implementation Phase program

2. Appoint Instructional Development Teams in the Clinical Experiences and Professional Use of Knowledge components, released full-time for two terms to prepare materials and ready modules for implementation

3. Develop laboratories for the production of materials

4. Develop cataloging system for Learning Resources Center

5. Provide carrels for auto-tutorial instruction, simulation and micro-teaching feedback in Clinical Experiences and Professional Use of Knowledge areas as indicated earlier

6. Expand materials as required by Instructional Development Teams

Implementation Phase-Second Year (Full operation)

1. Continue all of above

2. Start all other facilities not included above for student-faculty produced materials

The initial developmental cycle for IRSS diagramming interactions with other program elements is illustrated in the PERT chart found at the end of the chapter. The critical path is shown by double lines.

Existing Facilities at Michigan State University and Recommendations for Their Use in BSTEP

Introduction

There are presently five centers and a number of widely separated Structured Learning and Teaching Environments (SLATES) providing limited services on campus to students and faculty at Michigan

State University. Descriptions of the present centers, locations, personnel and services follow, with recommendations for the relationship of each with the Instructional Resources Support System of the Behavioral Science Teacher Education Program.

On-Campus Resources

The Instructional Media Center

This university-wide service to academic departments has 58 staff members. The center is housed in a building at Wilson Road and Red Cedar Lane. Services are provided to faculty members for any scheduled classroom instruction of the Michigan State University Campus, in East Lansing, and include audio-visual equipment placement, 16mm sound films, and limited assistance to faculty members in instructional development. Instructional films from sources other than MSU are obtained on request. Limited production work in graphics, films, sound-recordings, and tape-duplicating is available on a fee basis.

Aspects of this excellent model will be utilized or replicated, to serve needs of both students and faculty in BSTEP.

Closed Circuit Television (CCTV)

CCTV provides services ranging from production and tape playback to instructor-controlled TV Systems. CCTV, with offices and studios already in the College of Education building, would expand to accommodate the BSTEP program. TV equipment and services for BSTEP instruction and research will be included.

The Materials Center of the Science and Mathematics Teaching Center

This center is located in McDonel Hall, and specializes in mathematics and science materials. It provides both resources and a free-time laboratory to students and faculty.

The free-time laboratory is available throughout the day and evening, providing access to electronics gear, shop and elementary science and mathematical supplies.

Shop facilities include the band saw, drill press, electric sander, grinder, buffer, rock saw, assorted hand tools, spray paints, lumber and plastic materials. Graphics support materials are available.

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Since materials in this center are used for preparation of teachers, the collection can cooperate with BSTEP IRSS, to provide materials, management and instruction, with full identification and credits accorded to the funding source.

Instructional Resources Center (IRC)

The IRC occupies less than 4,000 square feet of space on the first floor of the five-story College of Education building. It comprises a library and attached study space, offices, work-rooms and a conference room. A limited collection of children's literature, recorded materials, reference books, texts, instructional media literature, curriculum guides, some two- and three-dimensional instructional devices, overhead projection transparencies, flat pictures, film strips, recordings, and microfiche materials are available.

The IRC is of insufficient size to house an adequate collection, or to accommodate present students. This collection can be salvaged as another nucleus of materials for BSTEP students and faculty members.

The USOE/MSU Regional Instructional Materials Center for Handicapped Children and Youth (IMCHCY)

IMCHCY occupies a substantial space within the Instructional Resources Center, described above. It is one of 14 USOE-IMC's in the nation, supported by the U.S. Office of Education's Bureau of Education for the Handicapped to provide library and field services to teachers and preservice teachers of designated geographic areas; in this case, Michigan, Indiana, and Ohio. The larger network comprises the IMC's, four Regional Media Centers for the Deaf, and the Clearinghouses on Exceptional Children-Educational Resources Information Center (CEC-ERIC). Its purpose is to provide information for preservice and in-service teachers and administrators of handicapped pupils, and to test the effectiveness of educational materials and media.

Library Services. A basic function of the USOE-IMCHCY is to provide a collection of selected audio-visual (AV), curriculum materials (CM), educational equipment (E), professional documents (D), and journals (J) relative to the education of handicapped children and youth, for students and teachers. It includes items designed and marketed for regular education plus those expressly intended for special-education needs. The current collection, after three years, numbers over 3,000 items, increasing at the rate of approximately 100 acquisitions per month.

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Information Service. Control of all information in the collection is effected by means of the Basic Indexing and Retrieval System (BIRS), a computerized information retrieval system developed earlier at MSU through U.S. Office of Education support. Information stored on magnetic tape is available for library and field use in several forms:

1. Book catalogs. Akin to a traditional library's card catalog. These note author, title, general disability, category, and publisher. Other printed lists are available by copyright date, number of pages, type of acquisition, audio-visual, curriculum materials, documents, educational equipment and journals, for each Center holding. For example, listings include acquisitions of another USOE-IMC in the network, or by a local IMC that is associated with our regional USOE-IMC through the three state departments of education of the region.

2. Subject indexes. In book form, these provide a printed general alphabetical index to the entire collection, as well as specialized subject indexes by disability area and types of acquisition.

3. Queries. College students, professors or personnel in the three-state area can direct queries to the MSU computer in standard language to elicit bibliographies of abstracts available on any subject needed (Question/Answer Service - Q/A). Sample copies of the most frequently asked questions with the computer-generated response provide Browsing Catalogs by curriculum, disability, and grade level combinations.

The U.S. Office of Education (BEH) has suggested establishment of an information center. In this regard, the USOE-IMCMCY soon will have holdings and materials on microfiche from CEC-ERIC.

An expansion of the computerized information retrieval service will include the use of a teletype terminal with access to the new CDC 6500 in the MSU Computer Center. This will allow direct, immediate access to files, provide immediate responses for Question and Answer (Q/A), and an inventory-control function. Advances in information transmission eventually will lead to our USOE-IMC tapping the resources of other information files via remote consoles into an information network such as ERIC.

Field Services. The USOE-IMC has established cooperative ties with each of the three state departments of education of the region for direct services to teachers and administrators at local and associate IMC's. The associate IMC's provide materials collections, conferences, in-service education, and demonstration activities sponsored and planned by each state department of education and the MSU

Field Coordinator. Displays of selected materials from the Regional IMC are circulated on a rotating basis to the local IMC's for special purposes.

Regular Publication. Information is disseminated through publication activity, which includes a quarterly newsletter, *What's New?* describing regional USOE-IMC developments, special education activities in the region, recent acquisitions, and instructional materials use. A documentary series, authored by USOE-IMC staff, provides information related to the education of handicapped children.

Evaluation. Preservice and in-service teachers are concerned with the effectiveness of various instructional materials and the behavioral objectives to which they can lead. The MSU Center sees materials-evaluation as a vital function of the IMC operation, with established policy and procedures for evaluation. Present teachers and students preparing to teach are deeply involved in this process at various levels; physical descriptions, teacher rating, expert opinion, limited field testing, and research.

Materials Development. New USOE-IMC-developed materials include instructional programs, teacher guides, single-concept cartridge films, slide series, manipulative materials, kits, and special adaptations of instructional materials, and diagnostic tests. Teachers and students preparing to teach are encouraged to develop new materials and share their ideas with others through the USOE-IMC printed publication *Idea Series*.

Media and Laboratory Practice. A laboratory, equipped with instructional media of all types, offers teachers and preparing candidates opportunities to see demonstrations of materials and to practice use of these materials independently and in self-instructional groups.

This separate collection of materials in the education of handicapped pupils can be merged with the BSTEP IRSS general collection to contribute to the required total information base for teachers of all children. Regular elementary teachers today have handicapped pupils in their classrooms, an increasing practice that recognizes that handicapped children can be and need to be educated in the mainstream. Materials heretofor thought special are useful in meeting the needs of *all* pupils. Identification of and credit to the funding source (Bureau for the Handicapped) will be maintained while management functions are shared with BSTEP to provide obvious economies for all agencies.

The USOE-IMC at MSU library service and management, information service, associate center operation, evaluation, materials development and media instruction can be expanded to provide these needed services to all students and faculty in BSTEP.

SLATES

(Structured Learning And Teaching Environments) are individual learning carrels equipped with tape recorders, earphones and projection equipment for visual materials, including individual television receivers. Additional equipment varies with the subject being taught; microscopes are found in most natural science SLATES; specimens, charts, and elaborate instruments in others. The environments provide space where students can learn on an individual basis, and are used by an increasing number of MSU departments to solve instructional problems in anatomy, biochemistry, biological science, nursing, physiology, soil science, mechanical engineering, veterinary medicine, human medicine, zoology, and education. As needed, education situations are simulated on film with lessons in the principles, theory, and practice of observation. Such skills are vital for teachers and prospective teachers. This new departure in observation-training promotes theses skills in a manner which circumvents the difficulties inherent in training beginners in real-life situations. Replications and modifications of SLATES for BSTEP IRSS, can be devised by administrative cooperation.

Off-Campus Intern Center Instructional Resources Support

The pervading philosophy of Instructional Resources Support System requires that students who are field practicing in clinical settings be provided instructional resources from the local school district when available or from BSTEP IRSS.

All of the present field practice intern centers currently accommodating MSU candidates maintain instructional materials centers (IMC's); they vary in quality and quantity of service. None has had specific agreements with MSU to provide all needed practice materials for MSU students.

Instructional materials for BSTEP clinical practice can be stored and managed at the BSTEP Learning Resources Center. Introducing students to up-to-date instructional resources facilities during early Clinical Experiences and Professional Use of Knowledge will stimulate demand for adequate facilities during later intern programs. In-service work, as it relates to instructional resources with Clinic-School Network faculty, will aid in the diffusion of experience with new materials. Thus the need for adequate facilities can be matched with up-to-date information about new media as their potential. As teachers learn so can they help their pupils learn.

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Learning Resources Center Equipment

Initiate during Pre-implementation Period and continuing through program

1. 12 each of the following:

   2" x 2" slide projector
   Filmstrip viewer
   Overhead projector
   16mm movie projector
   Record player
   Tape deck
   Cassette tape recorder
   Microfiche projector
   8mm single concept film projector
   Super 8mm single concept film projector

2. 6 each of the following:

   TV monitor
   Filmstrip projector
   Micro projector
   Rear projection screens

3. 2 each of the following:

   35mm camera, flash, aux. lens. for copy work and regular photography
   Copy stand for 35mm camera
   Super 8mm zoom lens camera
   Super 8mm film projectors
   Sony video tape recorder
   Sony video camera

   Moveable magnetic, chalk boards

4. 1 each of the following:

   Thermofax machine
   Ditto machine
   Dry mount press
   Lamination machines

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5. In addition, such supplies as:

Paper
Film 35mm
Film 8mm
Graphics supplies
Transparency materials
Video recording tape

Initiate during Period 1 and continue through program

1. Increase by 24 each of the items in 1 under Pre-implementation Phase

2. 10 each of the following:

Program simulators (probably 16mm movie projectors)
Cassette tape recorders

Initiate during Period 2 and continue through program

1. Increase by 16 each of the items in 1 under Pre-implementation Phase

2. One each of the following for the demonstration classroom:

Assorted maps
Assorted globes
Sample 3-D models
16mm movie projector
Film strip projector
Super 8mm single concept film projector
8 mm single concept film projector
2" x 2" slide projector
Overhead projector
Opaque projector
Micro projector

3. (2) Magnetic chalk boards
(4) Bulletin boards - mounted on wall
Display shelves
Sample manipulable materials
TV recorder and camera
Record player
Tape recorder (audio)

Initiate during Period 3 and continue through program

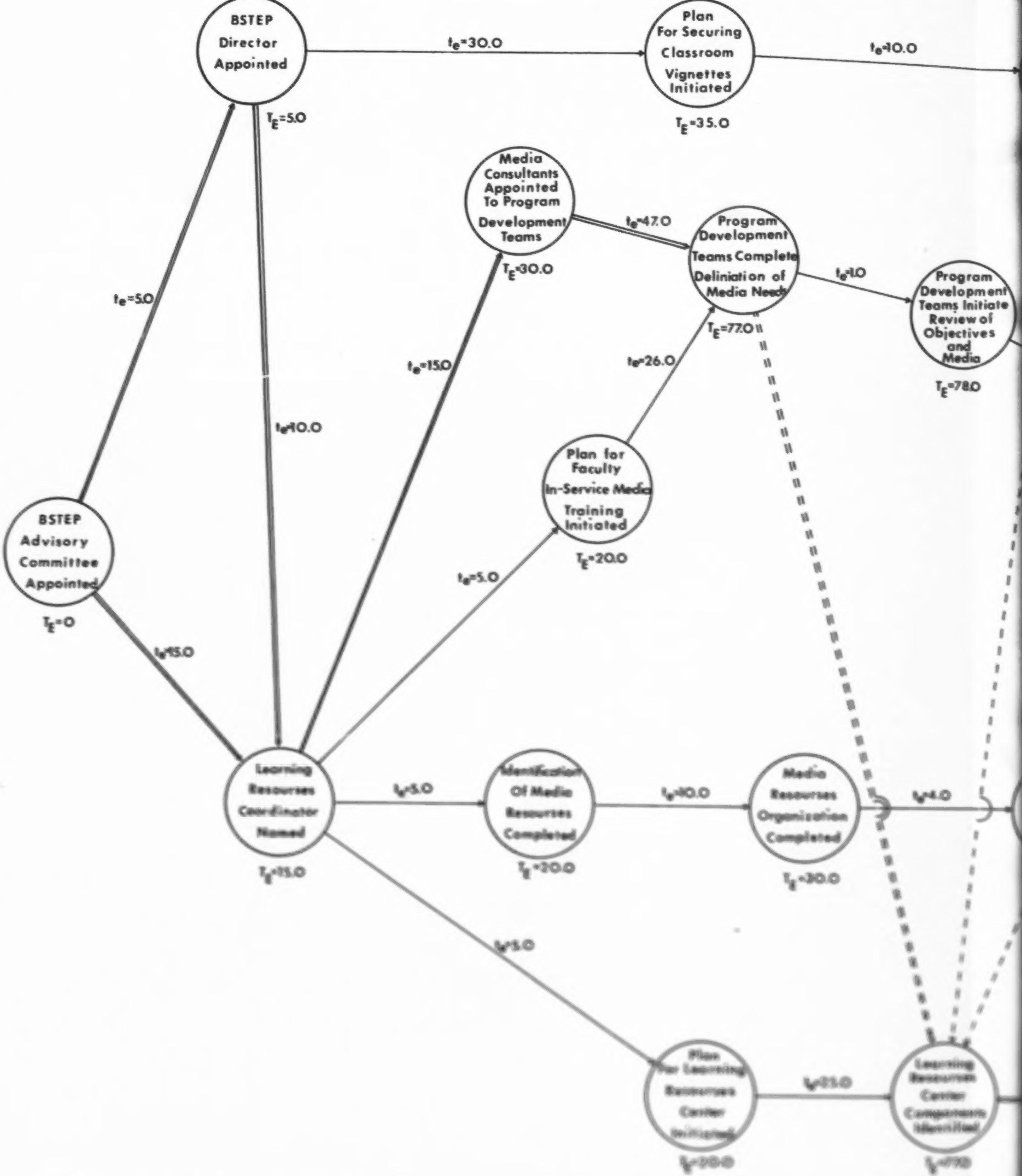
1. Increase by 10 the items listed under 1 in Pre-implementation Phase.

2. Increase by 6 the items listed under 2 in Pre-implementation Phase.

Initiate during Period 4 and continue through program

Increase by 10 the items listed under 1 in Pre-implementation Phase.

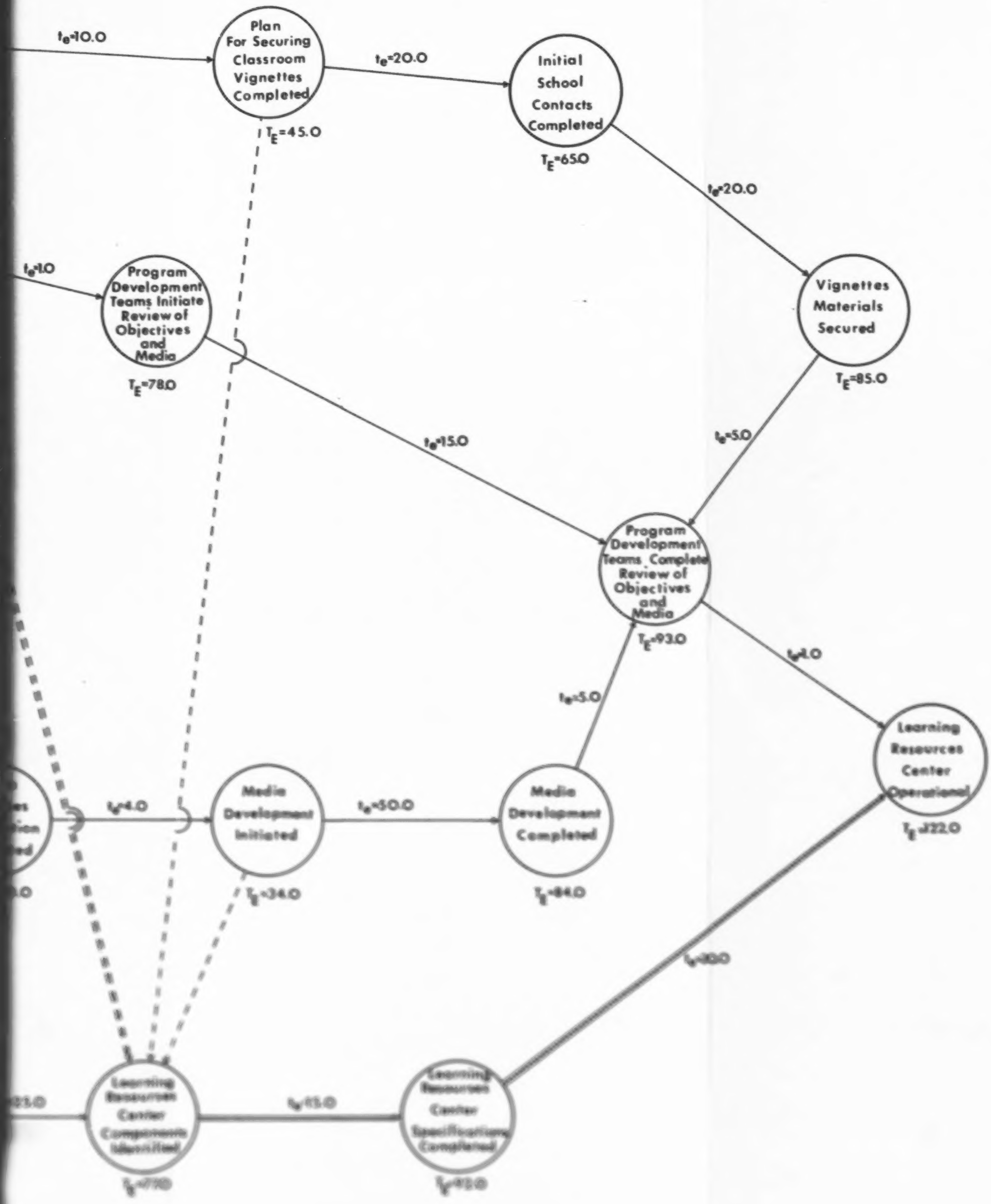
BSTEP IMPLEMENTATION PHASE - INSTRUCTIONAL MATERIALS SUPPORT SYSTEM


BSTEP Director Appointed
T_E=5.0
t_e=30.0
Plan For Securing Classroom Vignettes Initiated
T_E=35.0
t_e=10.0
Media Consultants Appointed To Program Development Teams
T_E=30.0
t_e=47.0
Program Development Teams Complete Deliniation of Media Needs
T_E=77.0
t_e=1.0
Program Development Teams Initiate Review of Objectives and Media
T_E=78.0
t_e=5.0
t_e=15.0
t_e=10.0
t_e=26.0
Plan for Faculty In-Service Media Training Initiated
T_E=20.0
t_e=5.0
BSTEP Advisory Committee Appointed
T_E=0
t_e=15.0
Learning Resourses Coordinator Named
T_E=15.0
t_e=5.0
Identification Of Media Resourses Completed
T_E=20.0
t_e=10.0
Media Resourses Organization Completed
T_E=30.0
t_e=4.0
t_e=5.0
Plan For Learning Resourses Center Initiated
T_E=20.0
t_e=23.0
Learning Resourses Center Components Identified
T_E=77.0

PERT Chart 5:1 Instructional Resources Support System

(Page 228)

TEM


te=10.0
Plan For Securing Classroom Vignettes Completed
TE=45.0
te=20.0
Initial School Contacts Completed
TE=65.0
te=20.0
te=1.0
Program Development Teams Initiate Review of Objectives and Media
TE=78.0
Vignettes Materials Secured
TE=85.0
te=15.0
te=5.0
Program Development Teams Complete Review of Objectives and Media
TE=93.0
te=5.0
te=1.0
Learning Resources Center Operational
TE=222.0
te=4.0
Media Development Initiated
TE=34.0
te=50.0
Media Development Completed
TE=84.0
te=130.0
23.0
Learning Resources Center Components Identified
TE=77.0
te=15.0
Learning Resources Center Specifications Completed
TE=92.0

SECTION III

MAINTAINING PROGRAM RELEVANCY

Behavioral Science Teacher Education Program

MICHIGAN STATE UNIVERSITY

1969

Section III Maintaining Program Relevancy

Introduction

Change that is inevitable and characteristic of today's world must be designed into any dynamic endeavor, including the present one. We may long, like Custard the Dragon in Ogden Nash's intriguing story, for a "nice safe cage" where everything remains constant long enough for us to get some teaching done. But the dynamic world we are caught up in will not allow a slower tempo of change. If BSTEP is to be in tune with present and future times, two areas must be given careful attention. First, the program must consciously consider and draw on the potentialities of a changing society. This effort cannot, as so often in the past, be left to chance or whim. The analysis of future societies discussed in Chapter 6 should not only have impact on the substance of the preparation program, but should also reflect student attitudes and responsiveness to change.

A second concern in maintaining a relevant teacher education program is the faculty who develop and implement the program. In BSTEP, the faculty includes not only the university staff, but also the intern consultants, supervising teachers, community agency personnel, school administrators, and others who are directly involved in the preparation program through the proposed Clinic-School Network. A continuing faculty orientation and in-service education program is vitally necessary for improving BSTEP.

These two areas, analysis of the future and faculty orientation and in-service education, are the focus of this section on maintaining program relevancy. However, they are not the only factors considered in this important task. Built into the general administrative design, discussed in Section IV, are safeguards to insure continual reappraisal and review. These include a specially-designed information retrieval system to assure an adequate and up-to-date data base involving students, program, and interactions. A highly sophisticated evaluation system coupled with a benefit/cost system are projected. The administrative structure itself was designed to enhance the cycle of program development and evaluation. Indeed, the process of program development, which assumes current relevancy as a necessary aspect, is built upon the clinic behavior style.

Inherent in the systematic development of the program are procedures for assimulating and assessing alternative approaches and inputs from many sources. In addition to those previously considered, a systematic introduction of field-tested experiences will be injected into the developmental cycle. Personnel from different vantage points in the program will have opportunities to test their ideas in other phases of the program. This idea was elaborated in the Phase I report. University faculty from Professional Use of Knowledge, Clinical, and Human Learning would have the opportunity to visit their students during internship to assess the impact of their previous training. Teachers in the Clinic-School Network would be assigned periodically at the university to work in materials development for professional experiences of prospective teachers. They would also lead seminars during students' early clinical experiences concerning the real world of teaching. The practice of employing teachers from the Clinic-School Network thus contributes to the program's development; but it also provides new insights for teachers. These are but two of several personnel cycles envisioned as ways to maintain program relevancy.

The BSTEP faculty must be a different kind of faculty than that of many current teacher education programs. In our changing world, we cannot hope to make a major breakthrough in teacher education using the old approaches. This does not imply that the faculty of today cannot make contributions; but it presumes that they will change their approach to solving instructional problems. This is an important and vital aspect of any dynamic developmental program.

To assure faculty understanding of the program goals, behavioral objectives, evaluative techniques, and instructional technology, an orientation and in-service education program is proposed. These vital functions are described in Chapter 7, following the analysis of future society.

One question which may logically arise is "is it feasible to design an in-service program for university faculty from many departments and professionals in the Clinic-School Network?" The question was explored by selected faculty from several departments and viewpoints. Their unequivocally positive response was based on the following facts.

1. Almost 100 MSU faculty members from seven colleges contributed to the original model, and are familiar with the concepts and foci of BSTEP.

2. The deans of seven of the largest colleges in MSU have supported and directed the project from its inception.

3. A new kind of faculty was developed in the existing Elementary Intern Program, a process which might be emulated in BSTEP.

4. New special-purpose colleges and administrative units are continually being incorporated into the university. For the massive

program and materials development needed, the administrative task force proposes such a feasible unit.

5. MSU already has developed a close operating relationship with more than 150 school districts. These mutual agreements, intact over several years, insure an adequate Clinic-School base. Several schools already have indicated a desire to participate in BSTEP.

While it is vital for MSU faculty to understand the basic tenets of the program, any implementing staff would be enhanced by such a program. The orientation and in-service education chapter proposes several specific procedures by which faculty in-service education can take place. Included are several individualized modules which could easily be utilized by other universities. The in-service education program for staff is designed with the clinical behavior style as a basic underlying tenet.

Chapter 6

SYSTEMATIC ANALYSIS OF FUTURE SOCIETY

During the past two centuries men have gained knowledge and power which they used to make a world increasingly unpredictable and uncontrollable. There are claims that some control already has been lost. In another focus Marshall McLuhan, holder of the Albert Schweitzer chair in the humanities at Fordham University, insists that most people are behind in their view of the world. Thus they are seldom aware of their present environment and are even less aware of the future environment. McLuhan maintains that, during the period of its innovation, an environment is invisible. It becomes visible only when it has been superseded by a new environment. The present is always invisible because the whole field of attention is so saturated with it that only a man of integral awareness recognizes it. The two views of man's world are debatable; both have been challenged by the futurists.

Man has always wanted to predict the future. In recent years, many individuals and groups have been attempting to foretell precisely in time, quality, and quantity the future or alternative futures. Calculations of the future and how to modify it are no longer considered obscure academic pursuits. Instead they are the business of many who are concerned about and responsible for devising various modes of social change.

Future planning is of major concern to government agencies as well as social scientists. Reports of panels, task forces, editorial boards and seminars abound. The Department of Health, Education and Welfare sponsored a study which, under the direction of William Gorham and Daniel Bell, explored the possibilities of a social state-of-the-union. The American Academy of Arts and Sciences has established a Commission of the Year 2000 and a short-term Panel on the Year 1976. The American Academy of Political and Social Science has studied the Social Goals and Indicators for American Society. The United Nations sponsors a small future-planning operation in Geneva. Recently a World Future Society was formed in Washington D.C. General Electric Company has set up the Technical Management Planning Organization in Santa Barbara where 200 physical scientists, sociologists, economists and engineers contemplate the future. The Air Force, at Wright-Patterson Air Force Base, conducts studies of the problem of scientific prediction as does Rand Corporation (with the help of the Air Force funds). The Hudson Institute, a nonprofit organization directed by defense expert Herman Kahn, investigates the possibilities of war and peace as well as the future in general. The Ford Foundation supports organizations such as Resources for the Future and Les Futuribles (the name is a combination of future and possible) which is headed by Bertrand de Jouvenel.

Universities are directly involved in future planning, too. Dr. Charles Osgood of the University of Illinois is conducting "a computerized exploration of the year 2000" and Southern Illinois University sponsors the Buckminster Fuller World Resources Inventory. Recently, future-planning centers were initiated at Stanford University and Syracuse University. I.B.M. commissioned a ten year program in Technology and Society directed by Emmanuel Methene. There was also a network television series entitled 21st Century which offered such futurists as Bell, Kahn, Sir Peter Medowar, Lord Richard Caldwell, Juvenot and Denis Gabor on a panel. Topics featured have included fertility control, extended life span, controlled thermonuclear power, further automation, genetic control, man-machine symbiosis, household robots, wideband communications and opinion control. Thus, we are getting closer to developing effective methods for shaping the future and are advancing in fundamental social and individual evolution.

Immediate experience plays a diminishing role in an increasingly complex society as a source for information and basis of judgment about present and future social needs. Numerical indexes of phenomena are appropriate to these needs. The most basic tool for forecasting the future is extrapolation from yesterday and today; but other methods are used. Herman Kahn of the Hudson Institute uses scenario writing in which alternative future situations are dramatized. Other forecasters use a symbolic model of particular social or economic structure to include whole industries or nations and then simulate the interaction of the variables. Rand uses the "Delphi" method in which a wide range of experts have confrontations and arrive finally at a near-consensus.

There results from all this very little utopianism. None of it is an apocalypse. Much of it may appear contradictory, especially when each prediction is viewed separately. Documents and reports show the futurist uses his predictive faculty to measure the feasibility of his aspirations. More specifically the pattern for the future may be characterized by:

1. Open and deliberate attention to the selection of ends toward which planned action is directed, and an effort to improve planning by sharpening the definition of ends

2. Systematic advance comparison of means by criteria derived from the ends selected

3. Candid and effective assessment of results, usually including a system of keeping track of progress toward interim goals, (including a sensitivity to changing values and evolving ends)

4. Effort to mobilize science and other specialized knowledge into a flexible framework of information and decision so that specific responsibilities can be assigned to the points of greatest competence

5. Emphasis on information, prediction, and persuasion rather than on coercive or authoritarian power, as the main agents or coordinating the separate elements of an effort

6. Capability for predicting the interacting effect of several lines of simultaneous actions[1]

No common movement or idea of the future seems to exist, at least as far as we have been able to identify, for the background and predilections of the future-planners are too diverse and diffuse. At the one end of the continuum are liberal and socialist humanists who appear fairly conscious of the values they want the indicators to show. At the other end are the systems analysts.

Even the most far-seeing person cannot accurately predict what the world will be like at the birth of the new millennium. No reliable methods of prediction or forecasting exist. Futurists do not make predictions in the truest sense of the word; instead many of them engage in the more complicated and subtle art of defining alternatives. They explicitly identify the available choices along with the related costs and benefits and the merits of alternate choices. The problem in preparing for the future involves in large measure declaring one's priorities and making necessary commitments. When electing an alternative future man must determine whether it directs us toward stability or toward change, whether it directs us toward already established values or toward a self correcting value system, whether it directs us toward affirmation of eternal verities or toward a kind of historical revisionism. These two conflicting goals of stability and change have been dominant in the history of human thought. Their prototypes go back to Parmenides and Heraclitus, Greek philosophers who lived before Socrates. For Parmenides, stability was the one reality, and was continuous and changeless; change in the form of creation or passing away was inherently contradictory and illusory. For Heraclitus, change in the form of the striving of opposites was the only reality, and stability was illusory. All things, he said, are in process and nothing stays still, ("You cannot step twice in the same river.") Thus, Parmenides favored a world view of stability and Heraclitus chose the world view of change.

Some people now view change in essentially the same manner as did Parmenides, with institutions (nations, religions, business organizations, industries) viewed as enduring. They deem changes of values to be deviance, undependability and flightiness. They presume values to be firm and constant. To the extent that they admit historical change they see it according to the model of progressive and steady development within a stable framework of value. Likewise, their concept of human identity rests on the assumption of a continuing stable state.

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[1] Max Ways. "The Road of 1977" Fortune, January, 1967, p. 95.

The Parmenidean attitude suffers as the rate of change increases. Too much has happened to laws, views of the world, values and institutions within the span of a man's life to sustain the Parmenidean attitude. The main source of the challenge to the Parmenidean attitude is technological innovation. For some people, technological change is not incompatible with the Parmenidean view and they have used it as an instrument to achieve stable social objectives. They have refused to admit that technology has made demands of restructuring upon them or that it has affected their very nature and structure of their way of life.

Other people recognize that in order to cope with technology we must accept the Heraclitan view. They consider mandatory a change-oriented cultural policy. The vast proliferation of science and technology has dramatized the necessity for a new, change-oriented cultural policy. We must recognize that 1) technology and science often lead us to new options or new alternatives for handling old problems; 2) new options may lead to re-evaluation of existing practices and values; 3) as these new scientific discoveries and understandings take place, we need a system of values to support our decision-making process, since values suitable in one age may not be suitable in another; and 4) costs may be involved in exploiting opportunities provided by science and technology.

Schon, Mesthene, Ishimo and others argue as Heraclitans, that the values for the future society should be anchored to plans of action, principles and concepts forged out of the continuum of human experience with constant change, rather than from the illusion of permanence of static imitation of social habit.[2]

There is little doubt that environments do change. To recognize present and future environments one must know the sources of change which create a new environment. Technology is the major source of change. It opens up possibilities of manipulating, mastering and transforming nature, resources, time, and space. It offers a systematic disciplined approach to objectives, permits precision and measurement and a systems concepts that may be quite contrary to traditional religious, esthetic and intuitive modes. Because of technology, decision-making can be based on such techniques as simulation, model construction, linear programming, and operations research.

But, other sources of change in society exist. These include the diffusion of existing goals and privileges in society, the structural development in society, and the relationship of the United States to the rest of the world.[3] Human capital rather than financial capital is considered urgent; sociological questions about relationships of new technological modes of decision-making to the political structures of society are raised; and there tends to be a shift from the product sector of economy to that of service. Also, the cannon of the Occident has been replaced by the cannon of the globe. Our image of man is ceasing to assume tacitly that the white man is made peculiarly in the likeness of God.

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[2] Paper presented by Iwao Ishimo, "The Rise of Science and the Need for a New Cultural Policy," quoting Donald Schon, president of the Organization for Social and Technical Innovation in Cambridge, Mass.

Almost all planners anticipate a plurality of possible futures, rather than predicting one specific state. Thus, those who pose the future worlds put a culture in the position of having to translate into reality its chosen image of the future. The image of the future which a culture holds is in effect the key to its future. If we admit that the image of the future can be effectively introduced as the most efficient link in the chain of causability, if we admit that our image of the future is in any way and to any extent our own choice and responsibility, then we have a way of reconciling our belief in determinism and our belief in freedom.[4] Without a doubt, we have a challenge. As we accept the future world, as we frame questions about the society and plan the future, we consciously or unconsciously inject our own values into our answers, values that may be old or new and placed in hierarchial fashion or in a spectrum.

The catalog of future possibilities, likelihoods and inevitabilities covers a wide range of areas with considerable variation in reaction to each prediction or set of predictions. The implicit premise underlying all these predictions is that the context of the United States and the world will remain the same and that there will be no major invention or discovery. A typical futurist's reports reveal that in the future there will be:

> huge population increases, increases in the size of dependent populations; more protests; worsening race relations; more mass violence; a larger generation gap; more air pollution; more drugs; famines that will kill half a billion people in one year; massive air invasions; career training will not keep up with career roles; essential information about public policy will become secretive and most people not to be able to participate in government; and so on.[5]

Another futurist is convinced that mankind can and will use its rationality, the marked expansion of the physical world and new potentials for understanding the mechanisms of the simplest atoms and of life itself to a fuller realization of such goals as exploration of space, lengthening of the life span, elimination of human suffering through biological reconstruction of the human race, development of independent artificial intelligence and expansion of the range of human awareness by direct stimulation of the brain.[6] The documentation and elaboration included in this report by Feinberg, a theoretical physicist, are modern. It is an attempt nonetheless at social philosophy and propaganda that provides food for thought.

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[3] Daniel Bell, "Toward the Year 2000", Daedalus (Summer, 1967) pp.36-651.
[4] Pierre Bertaux, "The Future of Man", Environment and Change (edited by William R. Ewald Jr.) Indiana University Press, 1969, p. 392.
[5] Donald N. Michael, Planning for a Precarious Future. Basic Books, 1968, p. 138.

Consider the statement made by another futurist, Rand's Olaf Helmer. This forecast advances, as do many others, the concept that analysis should be done within a systems context that specifies the major social, political and economic relationships that will occur at any given time. Each prediction is made as a single instance isolated from the other, though there exists the realization that any one prediction is not only dependent upon the others but is dependent upon the state of, and image held by, the society itself.

The World of 1984

Population: 4.3 billion

Desalinization of water will contribute to agriculture.

Birth rates will decline due to effective fertility control.

Transplantation of natural organs and implantation of artificial organs will be commonplace.

Use of personality control drugs will be widespread.

Teaching machines will be in wide use.

Automated library will search and reproduce relevant materials, and will aid research.

World-wide communication will be enhanced by universal satellite relay systems and by automatic translation machines.

Automation will span the gamut from service operations to some types of decision-making.

Ground warfare will be modified by rapid mobility and highly automatic capability.

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[6] Gerald Feinberg, The Prometheus Project, Mankind's Search for Long-Range Goals, Doubleday, 1968, p. 216.

Anti-ICBM missiles will become effective warefare devices.

Anti-sub warfare will become highly developed.

The World of 2000

Population: 5.1 billion

New food sources will be tapped, chiefly from the oceans.

Controlled thermonuclear power will provide a major source of energy.

New raw mineral materials will be obtained from the oceans.

There will be regional weather control.

General immunization will be possible against bacterial and viral disease.

Primitive forms of artificial life will be generated in laboratories.

The correction of hereditary defects through molecular engineering will be possible.

Automation will advance further.

A universal language will evolve through automated communication.

Men will land on Mars and permanent unmanned research stations will exist in space.

Weather manipulations will be possible for military purposes.

The World of 2100 (conceivable - not predictions)

Population: 8 billion

Chemical control of aging process may be achieved, raising a person's life expectancy to over 100 years.

Growth of new limbs and organs through biochemical stimulation may be possible.

Man-medicine symbiosis may permit a person to raise his intelligence by brain tie-in with computers.

Advances may be made in household robots, remote facsimile reproduction of newspapers and magazines in the home, completely automated highway transportation, etc.

Adequate provision of life necessities for all people of the earth by international agreements may be a reality.

Commercially efficient transmutation of elements may eliminate elaborate differential mining processes.

Gravity may be controlled through some modification of gravity fields.

A permanent lunar colony may be established with regularly scheduled commercial traffic between the earth and the moon.

The future's certainty is change and challenge. The futurists have given us a set of possibilities. The way in which these possibilities are combined depends upon the social system in which they are received. Furthermore, all these predictions and conceptions are made within the context of a stable, static, and contemporary view of the United States and the world. The social systems and the relationships between them are bound to change over the years. These changes, perhaps more than the technical feasibility of any of the breakthroughs, will determine the possibility of realizing the predictions. Consequently, repeated and frequent appraisals of the predictions are needed in terms of the contemporary scene and value problems if one is to take intelligent and effective advantage of the futurists' findings. Ultimately, intellectual experiences should be translated into individually meaningful terms. For example, one may view alternative future societies as follows:

1. There are very real doubts concerning the future of our democratic way of life.

Yet, intimations of the future suggest capabilities for making democracy more responsive to the needs of people and more successful in planning for the use of all resources, knowledge, and processes in the service of mankind.

2. Population concentrations may grind individuals into a sense of impotence and undermine their feelings of worth and dignity.

Yet, concentrations could make it feasible to provide the very best services and activities possible. Further, transportation and communications capabilities could provide adequate contacts with people and places far removed. Closeness could create appreciation of rich diversities in various groupings of individuals without homogenization, from interaction with those who are "different."

3. Biological capabilities may be misused to promote narrow, selfish interests.

Yet, they could be used to overcome limitations which in the past have held people down. They could be used to create healthier minds and bodies and extend capabilities for enriched perceptions and feelings.

4. Systems approaches and cybernetics may reduce men to robots without a sense of worth, humaneness, justice, or yearning to be free.

Yet, they could free man to find himself as a unique entity recognized for what he is rather than what he produces. They could remove material causes of conflict and greed.

5. Improved capabilities in communications and transportation may stimulate excessive mobility and destroy an adequate sense of stability; such capabilities may stimulate movement of people as pawns on a chessboard.

Yet, they could provide means for enrichment and effective interaction with peoples everywhere. This could stimulate improvements and movement away from provincialism without destroying meaningful diversity.

6. Rapid changes in and proliferation of values and objectives may create divisiveness to rend society into conflicting subgroups.

Yet, changes could create a wholesome acceptance of continuous movement toward values which are viable for the times, in the direction of increased humaneness, justice, freedom, peace, and honesty in human relations.

7. Tendencies toward racial, ethnic, class, and national manifestations of tribalism may create fears, tension, and conflict as standard conduct.

Yet, a reasonable degree of tribalism could counteract other trends toward pervasive conformity and provide a degree of experimentation with and application of differences in values, objectives, processes, and products. Out of this could come rich interaction of peoples who have developed pride as part of a distinguishable and supportive tribe.

8. Education may be reduced to indoctrination, prescribed skill development, induced satisfaction, and routinized searches for pleasure and comfort.

Yet, it could become individualized, relevant, and enriched by the tools of technology and world-wide resources of people, places, and things. There could be lifelong growth in knowledge, insights, and competences for all humans. There could be a satisfying mix of that which humanizes and that which facilitates effective, competent citizenship.

9. Teacher preparation programs may become prescribed exercises in information mastery, skills development, attitude change, and competency development at rigid performance levels. School personnel may become prepared to use materials and tools which individual teachers cannot or may create or modify, prescribed by an excessively small, selfish elite not responsible to the general populace.

Yet, it would be possible to prepare school personnel capable of using the right mix of content, materials, equipment, spaces, and places to help children and youth to attain their uniqueness and competence to live democratically in a most complex world.

Futurism should not be fatalistic. Projections should not be self-fulfilling prophecies. Futurism should be used to react to change in context of values and processes compatible with democracy. Futurism should be used, along with the increasingly wide array of intellectual and technological tools, to move men toward self-identified destinies.

The future is not in itself fearsome. To those who have vision, will, perseverance, and competence, the future is a challenge of great magnitude. The task is to create in social endeavors the kind of sturdy erectness of spirit man has demonstrated in climbing Mt. Everest, stepping forth on the moon, or rebuilding after disaster. He must learn to walk with erect spirit, mind, and body among his neighbors. He must effectively forge human and natural resources to serve his fellow man and help create uniqueness through the tools acquired in places of learning. Is this not what the future is all about?

Illustrative Responses to Change Relative to Teacher Preparation Programs

The following pages contain a series of loosely related figures. Each analytical figure provides a simple flow from a description of projected changes to illustrative responses in teacher preparation programs. Both analyses and illustrative responses are brief, in the assumption that the reader is well-versed in this area and can provide many additional ideas with relatively little stimulation. The basic purpose of this section is to provide the beginning of a conceptual framework for adapting preparation programs to changes as they occur. This should minimize the historic tendency to respond to crisis with crash programs (for example, varied reactions to Sputnik).

The figures may be read in a meandering fashion as a stimulant to self-defined structure. The general flow in reading should be from "1" to "5". Each section, labeled with an arabic number, should be read as a block. Sub-sections are not automatically related, for example, one headed by a small "a" in section "2" is not necessarily directly related to "a" in "3".

For those who wish some structure, the following is provided. There are five broad categories with several sub-categories:

1. Futurism as a social tool and decision making by an elite
2. Population factors
    - a. Population concentrations
    - b. Increasing youthfulness of the population and generation gap
3. Biological capabilities
    - a. Biological capabilities in controlling inherited characteristics and potentialities
    - b. Body repair and health improvements
4. Man and interaction dynamics
    - a. Shifting social values
    - b. Governance and services by varied agencies, organizations, and enterprises
    - c. A controlling elite
    - d. Conflict and cooperation among peoples at home and abroad
    - e. International arrangements and nationalism
5. Man's technical and natural resources
    - a. Knowledge explosion and means of analyzing, processing, storing, and retrieving ideas and information
    - b. Systems approach and cybernetics
    - c. Diffusion of prosperity and increased social mobility
    - d. Communications capabilities and potentialities for opinion control
    - e. Transportation capabilities (supplemented by communications capabilities)
    - f. Nuclear power
    - g. Space and underwater explorations
    - h. Environmental pollution

Futurism as a Social Tool and Decision-Making by an Elite

1. OVERVIEW

a. Description

The capability of projecting present potentialities and emerging developments into the future will be increased. The complexity of the society and rapidity of change will require that comprehensive long-range planning become the rule, in order that carefully developed plans will be ready before changes occur.

b. Consequences

Long-range planning and implementation of plans will be made by a technological-scientific elite. Political democracy, in the American ideological sense, will be limited to broad social policy; even there, issues, alternatives, and means will be so complex that the elite will be influential to a degree which will arouse the fear and animosity of others. This will strain the democratic fabric to a ripping point.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Pressures on the schools to meet highly specific social demands, as identified and specified by the elite	a. Need to translate social imperatives into curricular-methodological realities	a. More emphasis on interdisciplinary studies and experiences, to enable school personnel to function within the total social setting	a. Interdisciplinary studies, taught through programmed means and in seminars
b. Programming of much of teaching and learning by means of computers, paper-type programmed materials, teaching machines, and other technological means of attaining a prescribed curriculum	b. Need to help individuals maintain a degree of uniqueness while preparing for social roles	b. Use in applied situations of varied teaching-learning tools, as means of extending personal capabilities	b. Varied vicarious experiences such as simulation and applied situations as staff service in agencies and enterprises
	c. Need to master technological means of instruction in a way that is personally meaningful to students	c. Provisions for experiences in varied social settings, as means of learning about social realities and how to function effectively in those settings	c. Directed experiences in scenario writing (dramatizations of projected situations), utilizing model decision-making processes, and confrontation situations --all designed to improve school personnel capabilities in projecting the future and planning for it

Population Concentrations

1. OVERVIEW

a. Description

While population control will ultimately be effected voluntarily or legally, over-population will characterize much of the world for some time. The enlarged population will be concentrated in relatively small sections of the country, thus creating large metropolitan areas such as one reaching from Boston to Washington.

b. Consequences

Society increasingly will accept regionalism as a viable solution to complex problems, but society will not move fast enough or with sufficient vigor. Population increases in the U.S. itself will be manageable in terms of needed increases in planning and services. Concentrated populations will create tensions and strain public services.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content focussed on differences and likenesses of people	a. Need to understand the dynamics of population concentrations	a. Extensive interdisciplinary studies and experiences	a. Interdisciplinary seminars
b. Laboratory and field experiences in developing human relations competences	b. Need to be competent in performing leadership roles in the community	b. Extensive and intensive laboratory experiences which develop interpersonal and group attitudes and skills	b. Sensitivity training
c. Efforts to improve self-concept to enable each person to maintain uniqueness among the multitudes	c. Need to develop individualized instruction and counselling competences	c. Varied experiences in providing individualized instruction and counselling of students	c. Counselling practicum
d. Increase in individual recreational, cultural, and learning activities to help individuals maintain their uniqueness			d. Micro-teaching and tutoring experiences focused on individualized instruction

Increasing Youthfulness of the Population and Generation Gap

1. OVERVIEW

a. Description

The actual number and percentage of the population under 30 years of age will increase. The values of the young will influence those over 30 significantly. Thus, the society will be a youthful one in terms of attitudes, objectives, and practices. A generation gap of major proportion will exist.

b. Consequences

The young in age or in attitude will predominate in all aspects of the society. Older members will periodically attempt repressive measures to stem societal changes which seem too radical, unfeasible, and so forth.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Decrease in content with a past orientation; increase in content with intrinsic values	a. Need to be flexible in attitudes, methods, and content selection	a. Efforts to provide intensive experiences which can yield such competence and a sense of security concerning content and method that on-the-spot adaptations can be made in response to student interests	a. Extensive pre-service and in-service involvement of young personnel in decision-making on selection, training, and retention policies and practices
b. Methodology which stresses involvement of students in much activity	b. Need to be competent to a degree which is evident to the young and which stimulates openness to adult guidance	b. Improved image of the profession as the number of youthful personnel increases (with concomitant improved recruitment and retention)	b. Clinical experiences with youth in varied settings
c. Facilities which are pleasant and activity-oriented, for day-night, year-round use	c. Considerable tendency to seek a share of pleasure while continuing intellectual-cultural pursuits, producing a degree of understanding of the younger generation	c. Increased efforts to broaden knowledge of and understanding of the young	c. Confrontation sessions involving prospective personnel and high school youth to increase competence in working with them

Biological Capabilities in Controlling Inherited Characteristics and Potentialities

1. OVERVIEW

a. Description

Biological capabilities for controlling a child's birth and his development and reactions after birth will increase. Birth control capabilities will become perfected on a semi-permanent level. Thus, most children will be wanted and "designed" with maximum capacities for future development and minimal hindrance to projected development.

b. Consequences

The society's capacities for quality living will be enhanced by the quality of its citizenry and the level of development which will be reached by many. However, for personal-philosophical-political reasons, birth control may not be practiced, and children may be programmed without balanced characteristics and capacities. Potentialities for conflict will be increased by various kinds of elites with different values and priorities.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Working relationships with medical centers to facilitate the use of medical tools to produce children of desired learning potentialities	a. Greater need to be able to help extremely different individuals attain maximum development--or at least to individualize instruction to promote growth in prescribed directions	a. Increased efforts to improve diagnostic and prescriptive skills	a. Increased efforts to create diagnostic and prescriptive competences on an individualized basis, e.g. through use of tutoring experiences
	b. Greater need to be able to work with children who are biologically superior (years needed before biological improvements will be reflected in the kinds of persons in the professions)	b. Increased efforts to minimize deficiencies and build on strengths	b. Utilization of drugs, organ transplants, and other means in an effort to minimize some of the biological gap between personnel and students

Body Repair and Health Improvements

1. OVERVIEW

a. Description
There will be significant increases in capabilities of improving health and extending the life span. Artificial organs, cell restructuring, and chemical applications will permit major changes in individuals after birth. Indeed, major changes will be induced in total populations through manipulation of water and food supply, climate control, and the building of structures with total environmental controls. Ultimately, these capabilities will produce conflict between those who want to live and those who want to create new life.

b. Consequences
Society's capabilities for improving quality of living and lengthening the life span will create a frightening dilemma: 1) more time to live, with greater physical health; 2) less meaningful activity to translate time into purpose and pleasure. Major policy conflicts will arise over biological capabilities to change individuals.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT OF PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Some increase in efforts to help students build philosophic foundations on which to develop constantly revised personal constructs of life	a. Need to help students develop attitudes compatible with societal needs and personal values, both placed under strain by emerging biological capabilities	a. Some increase in emphasis on the foundations areas	a. Seminars focussed on personal-social issues
b. Some increase in efforts to improve motivation toward and capability for wise use of time	b. Need to help students gain experiences in translating value questions into operational terms	b. Some increase in studies of the physiological aspects of human growth and development	b. Individual study projects directed by various kinds of specialists, integrated in group seminars
	c. Need to increase skills in working with professionals from the biological fields	c. Some increase in experiences designed to improve capabilities in determining social policies	c. Tutoring experiences with children who have contrasting biological traits

Shifting Social Values

1. OVERVIEW

a. Description
Rapidity and magnitude of change, individual susceptibility to attitudes influencing actions, intensity of interaction in highly concentrated population centers, and other factors will increase the rate of value change and their extent.

b. Consequences
Cohesive, stable value which lead to predictable selection of courses of action, from among many alternatives, will become rare. Pragmatic values--those that help to make decisions which "work"--will prevail. Pragmatism is, in turn, a key function of values; therefore, society will be divided and in conflict. Mass media will be used systematically to prevent societal disintegration.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Increasing difficulty in selecting content compatible with prevailing values and norms; greater tendency to create understanding of alternatives and to stress means for all students to create their own value system as well as to practice it	a. Greater stress on relations with students and the community	a. Improved recruitment and selection processes which result in exceptionally mature, healthy school personnel	a. Seminars grounded in philosophy--both general and educational
b. Difficulty in responding to conflicting pressures, to either facilitate change or to serve as a conservative force	b. Greater need for tolerance of ambiguity	b. Significant increase in liberalizing arts and knowledge	b. Planned living arrangements wherein students from varying areas of specialization live and study together for a sufficient length of time to facilitate in-depth interaction, both on and off campus
c. Problems in selecting instructional strategies and means	c. Greater need for skill in facilitating growth processes and for ability to use content as a means of developing new ideas and insights	c. Significant increase in intellectual-to-applied knowledge, insight, and skills-building in several field settings	c. Extensive training in conflict resolution, group negotiations, and interpersonal relations
	d. Increased capability for rapidly assimilating new conditions, integrating them into existing and emerging values, and guiding students in their value-building	d. Increased efforts to help preservice and in-service school personnel to develop and maintain a viable personal value system; therapy where needed	d. Varied field experiences and internships in settings that broaden understandings of value systems in operation

Governance and Services by Varied Agencies, Organizations, and Enterprises

1. OVERVIEW

a. Description

With tens of thousands of governmental units (including independent and quasi-independent school districts), the nation will continue its struggle to attain rational long-range planning and program coordination. These many units are likely to continue long after their historical origins are forgotten. They will respond slowly to major regional problems and crises. Additionally, quasi-legal or extra-legal organizations and associations will provide stimulation, leadership, and coordinating functions. Foundations and quasi-public private enterprises will supplement publicly operated services. Although expensive to maintain, the nation will add layers of institutions, agencies, organizations, and enterprises rather than scrap existing arrangements and rebuild the society. More creative utilization of existing fiscal, leadership, and data resources will be developed in a compromise position.

b. Consequences

The nation will continue its evolutionary efforts to respond to change and crisis. Those who feel desperate about the need for change will use violent means periodically to shake the establishment into action which will be a remediation rather than remodeling. Assuming a general material security, such remediation will be sufficiently creative to preclude general revolutionary convulsions.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Educational processes in many places under many auspices b. School-sponsored programs per se rather limited; for example, reading instruction and developing inter-personal skills	a. School staffs expert in teaching and learning; responsibility for aiding professionals in other diverse fields to carry out educational roles b. Diversity in kinds of preparation, competences, and interests	a. Greater emphasis on education in broad social context b. Comprehensive programs designed to produce broadly educated generalists and many kinds of specialists	a. Interdisciplinary studies b. Varied community experiences as observers and staff members c. Internships in varied agencies and organizations

A Controlling Elite

1. OVERVIEW

a. Description

The Protestant Ethic will atrophy as more and more enjoy varied leisure and guaranteed sustenance. Work as the means *and* end of living will diminish in importance except for a few with exceptional motivation, drive, or aspiration. No major source of a sense of worth and dignity will replace the Protestant Ethic. Most people will tend to be hedonistic, and a dominant elite will provide "bread and circuses" to keep social dissension and disruption at a minimum.

b. Consequences

A small elite will carry society's burdens. The resulting impersonal manipulation of most people's life styles will be softened by provisions for pleasure seeking and guaranteed physical necessities. Participatory democracy in the American-ideal mold will mainly disappear. The worth and dignity of individuals will be endangered on every hand. Only exceptional individuals will be able to maintain a sense of worth and dignity.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Conflict between the ruling elite and others concerning basic educational questions	a. Reduction to technician level for the bulk of school personnel who merely manipulate largely teacher-proof programs; creation of a small group of elite scholar-practitioners who help to plan and direct, in close collaboration with the total establishment	a. Difficulty in recruiting and retaining school personnel motivated toward demanding life-long professional development and at the same time "in tune with" the average and elite citizen	a. "Think-tanks" where changes and their implications are studied and interpreted
b. Increased emphasis on student motivation in a cooperatively planned educational program for most, highly structured program for the self- and societally-selected future elite	b. Development of a facilitating role, with status derived from demonstrated competence in helping students	b. Largely individualized instruction with planned extrinsic and intrinsic rewards	b. An individualized program in which an individual becomes "better balanced" in creative artistic and physical expression
c. Increased emphasis on content and activities contributing to pleasure and personal meaning		c. Increase in variety and depth of experiences with artistic expression and physical activities	c. Seminars and experiences in the field to keep school personnel in touch with the mass population
d. Individualized learning			

Conflict and Cooperation Among Peoples at Home and Abroad

1. OVERVIEW

a. Description

The dominance of Caucasians throughout most of the world has declined markedly since World War II. Rising pride in one's own kind--for example, black pride in the U.S.--will be a major future force.

b. Consequences

In the U.S., separatist movements will create increased demands for community control of societal processes and resources. Co-existence will be shaky and will break down at times. The old ideal of the American "melting pot" will not be maintained as viable.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Early, pre-school efforts to create self-concepts which are racially-oriented	a. Need to be accepting of racially-oriented self-concepts, objectives, and motivations	a. Great increase in emphasis on sociology, anthropology, history, and other disciplines which create an awareness of varied racial groups (and ethnic-religious groups)	a. Interdisciplinary studies, in small groups to provide for sensitivity development
b. Curricular objectives, materials, and methods which are tailored to particular racial-felt needs	b. Need to be able to build on them in planning and implementing broader curricular programs which can provide a reasonable counterbalance in the direction of national, world mindedness	b. Great increase in experiences with individuals different from one's own kind	b. Encounter experiences both in school and college settings, and also in the community; correlated sensitivity training
	c. Need to be able to work with the community in attaining educational objectives, capitalizing on varied community resources, and contributing unique professional competences	c. Great care in providing experiences with varied kinds of individuals leading from vicarious, structured experiences to carefully selected field experiences	c. Personally relevant but structured experiences through such means as simulation, laboratories, games, literature
			d. Micro-teaching, directed field teaching, and internship in varied settings
			e. Studies of languages and arts of diverse groups and live-in experiences

International Arrangements and Nationalism

1. OVERVIEW

a. Description

Spheres of influence will be less predictable in years ahead. They will be more stimulated by nationalistic, ethnic, or racial factors than by all-encompassing ideologies and power blocks. A countervailing influence will be improvements in transportation, communication, economic arrangements and, perhaps, fear of catastrophe. Charismatic leaders and emotionalized local issues will maintain ethnocentrism for the foreseeable future. A fragile fear of holocaust will prevent major wars, which no one could "win".

b. Consequences

The American society will continue to be a distinguishable, viable entity. Cooperation will exist with other nations and international groups, but this will not produce extra-national loyalties.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content in flux as new national and international movements rise and wane	a. Greater need to understand the complex interface of innumerable variables	a. Efforts to provide varied international and inter-cultural instruction and experiences (to yield insights of American and others' cultures)	a. Field experiences in diverse racial and ethnic settings
b. Emphasis on how to understand power dynamics and related ecology (rather than mastery of facts)	b. Great need for ability to weave national goals and processes into the fabric of the larger world community	b. Efforts to prepare school personnel who can promote objective study and discussion of complex issues	b. Overseas studies for general education
c. Efforts to build rational thinkers capable of flexible responses		c. Provision for making school personnel familiar with and competent in instructional tools which can help bridge time, distance, and cultural gaps	c. Work experiences in different parts of the world, both in education and in other fields, to provide in-depth knowledge of and experiences with other peoples
d. Continued pressures to build patriotism, with tolerance for reasonable international emphasis			d. Communications centers with telephonic film, print, computer, translation, and other capabilities related to the world
			e. Use of international simulation games

Knowledge Explosion and Means of Analyzing, Processing, Storing, and Retrieving Ideas and Information

1. OVERVIEW

a. Description

Knowledge will increase in geometric proportions, increasing the quantity available and in many cases causing existing knowledge to become partially or totally obsolete. There will be increased capabilities for managing information and making it available in processed, personally relevant form and substance. Means eventually will be developed to transfer to individual brains new knowledge automatically.

b. Consequences

Society will have vast data banks which can be updated continuously and utilized in a systematic assessment of what prevails and steps which must be taken to attain current objectives. Decision-making will be systematic and decisions will be implemented readily.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content in constant state of flux	a. Pressures to be among best informed people and most competent in applying knowledge	a. Increasing length, breadth, and depth of preparation programs	a. Individual use of data banks, both local and worldwide--thus gaining access to man's store of knowledge and varied perceptions of it
b. Search for structures of knowledge	b. Necessity to know how knowledge is related in the abstract and in relation to particular teaching-learning situations	b. Increasing use of many disciplines, to provide both content and insights and data on how to organize teaching-learning activities	b. Interdisciplinary seminars focussed on interrelationships of knowledge and how to use different modes of inquiry
c. Emphasis on use of knowledge as a decision-making process and general tool to adapt to change and meet objectives	c. Necessity to be adept in using varied means of storing, retrieving, and receiving ideas and information	c. Processes for in-putting new knowledge--from sources such as the Educational Resources Information Center, professional associations, and journals--into programs' varied components and for up-dating performance assignments for individuals	c. Individual cassettes to keep in-service personnel updated, and supporting mediated materials to instruct groups and to stimulate group interaction
d. Use of technological capabilities to provide current bank of ideas and information, including means of up-dating printed materials			d. Staff-student committees responsible for continuous curriculum revision
e. Experiences in using knowledge in personally and socially relevant situations			

Systems Approach and Cybernetics

1. OVERVIEW

a. Description

The use of the systems approach to problem solving and of cybernetics to manage automation will remold the nation. They will increase efficiency and depersonalization. Man's traditional slow speed in thinking through problems, analyzing alternatives, testing and evaluating them, and implementing them will be eliminated by computers and cybernetics. Only a few people will be able to have a major role in the processes, and they will apply the remnants of the Protestant Ethic. Most of the population will seek meaning through other means or devote themselves to pleasure seeking. The controlling elite will engage in power plays largely without the involvement of most of the people.

b. Consequences

The society will be a leisurely one. People will study, play, and travel; some will be in various stages of the drug-induced experiences.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content organized into computer directed performance tasks	a. Need to understand and use management capabilities	a. Instruction in and application of systems approach and cybernetics	a. Laboratory experiences in systems approach and cybernetics
b. All management aspects of school and classrooms computerized, releasing school personnel for human interaction roles	b. Need to guide the young in an understanding of and mastery of computer-machine capabilities	b. Intensive study of personal-societal consequences of change	b. Seminar on futurism
c. Emphasis on learning and applying processes involved in thinking and implementing	c. Need to be able to guide the young in the development of personal values in the societal context	c. Intensive study of logical, critical thinking and other intellectual tools for decision-making	c. Periodic work experiences in non-school agencies or enterprises in which cybernetics is applied
d. Extensive study of personal-social-implications of systems approach and cybernetics			

Diffusion of Prosperity and Increased Social Mobility

1. OVERVIEW

a. Description

General prosperity will be widely diffused; exceptional wealth will continue to be scarce. Wealth and power will be monopolized by the elite. This status will be based on competence, training, and achievement and will be open to anyone regardless of his origin. The total number of places in the elite will be very small, and only the exceptional will attain places there. While the offspring of the elite and near-elite will have an advantage in entering elite status, there will be fluidity in upward mobility. The relatively small number of poor people will be highly visible and the object of much study and remedial effort.

b. Consequences

Society will be rather contented because of general prosperity, and adequate upward mobility to satisfy the non- and near-elite with exceptional motivation and capability.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content focussed on value building, process competency, logical and critical thinking, interpersonal relations, and pleasure-cultural development--and other attitudes and skills compatible with a non-work world	a. Need to develop curricular goals which are process-oriented and pragmatic	a. Increased emphasis on relating education to prevailing societal conditions and study of disciplines providing such understanding	a. Seminars on existing and emerging conditions
b. Efforts to help individuals develop reasoned objectives and compatible strategies	b. Need to help students to think through alternatives, select viable objectives, and plan strategies for reaching them	b. Increased efforts to develop skills in prescriptive teaching	b. Course work and programmed study materials in several academic disciplines
c. Special efforts to help those, including disadvantaged, with special capabilities to work toward elite status	c. Need to work with both an elite and general populace in attaining diverse and often divergent objectives	c. Increased efforts to provide school personnel with competences needed for participation in a leisurely society (and hopefully some identity with it)	c. Laboratory experiences in diagnosing student capabilities, learning problems and planning experiences
		d. Many and varied experiences with different kinds of people	d. Field experiences to broaden understanding of the different aspirations and life styles of the people, for example, in a work crew working on a community project in Appalachia
			e. Workshop in recreational leadership

Communications Capabilities and Potentialities for Opinion Control

1. OVERVIEW

a. Description
The range of communications capabilities will be increased significantly. Each individual will receive at birth a multi-purpose identification number which will have, among other things, extensive communications uses. None will be out of communication with those authorized to reach him. Each will be able to receive instant updating of ideas and information on topics previously identified. Routine jobs to be done in any setting can be initiated automatically by those responsible for the task; all will be in constant communication with their employers, or other controllers, and thus exposed to direct and subliminal influence. Mass media transmission will be instantaneous to wherever people are and in forms suited to their particular needs and roles.

b. Consequences
Each individual will be saturated with ideas and information. Some will be self-selected; other kinds will be imposed overtly by those who assume responsibility for others' actions (for example, employers); still other kinds will be imposed covertly by various agencies, organizations, and enterprises. Relatively few individuals will be able to maintain control over their opinions. Most will be pawns of competing opinion molders.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content organized into small components which can be communicated through varied means to individuals in scattered places	a. Need to organize learning activities, monitor and diagnose progress, prescribe next steps in collaboration with students, and continue to assess progress relative to proficiency criteria	a. Increased emphasis on communications competences	a. Periodic experiences in a communications laboratory
b. School-centered activities largely limited to seminars, evaluation activities, etc.	b. Need to master varied kinds of communications competence and techniques	b. Increased emphasis on instructional strategies and means	b. Structured experiences in helping students to analyze communications
c. Capabilities to communicate with schools around the world		c. Increased study of personal-social-implications of communications	c. Seminar discussions on communications
			d. Study of education around the world, in order to relate it to U.S. education

Transportation Capabilities (Supplemented by Communications Capabilities)

1. OVERVIEW

a. Description
Improved transportation will contribute in a major way to the nation's economy, politics, sociology, and values.

b. Consequences
The society will shift, with great rapidity, its values and operational processes for implementing them. The nation will be united in one sense, and at the same time divided as a consequence of shifting values stimulated by mobility (and resulting lack of roots.)

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Individualized programs which enable students to move into the school or transfer out at any time	a. Need to work with children from many backgrounds, often highly stimulating	a. A rich interdisciplinary series of studies and experiences	a. Interdisciplinary seminars
b. Efforts to help students to establish an internal equilibrium regardless of residence	b. Need to be exceptionally sensitive to the available paths to humanness	b. Extensive experiences within the arts, to expand sensitivities and perceptions	b. Periodic study and recreational tours
c. Learning experiences in many places for long periods of time	c. Need to help children develop an inclusive patriotism and an empathy for others		c. Staff service with traveling groups of students
d. Content which stresses interrelatedness is demonstrated			

Nuclear Power

1. OVERVIEW

a. Description

Unlimited power will be provided by nuclear generators. Men and animals will terminate their physical energy roles. Power will be available to reshape not only life styles but also the earth itself. Animals will be kept only for affectional or conservational reasons, but in small numbers since they will be seen as competitors for valuable space and food.

b. Consequences

Society will have capabilities to do the jobs which need to be done, since it will have the necessary energy as well as cybernetic competences, both transcending limitations of men in getting tasks completed. Philosophical-political-economic factors will limit the application of capabilities made possible by abundant power and other resources.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content reorientation to the concept of plenty	a. Need to provide guidance to students in finding values and activities which are non-work-oriented	a. Increased emphasis on philosophical studies	a. Seminar emphasis on foundations area
b. Efforts to motivate students to plan ways in which available energy can be used adequately	b. Need to develop skills in guiding students in the development of their social values	b. Slight increase in study of the technological capabilities of nuclear age	b. Some course work and laboratory experience focussed on technology
c. Increased study of international implications of nuclear power	c. Need to understand the peaceful and destructive potentialities of nuclear power	c. Increased study of other areas of the world	c. Area studies--both in U.S. and overseas--and intercultural studies and experiences within the country

Space and Underwater Explorations

1. OVERVIEW

a. Description

Extending man's long history of exploring beyond his immediate surroundings, space and underwater explorations will have great impact on mankind. The "because it was there" motivation of the explorer will thrill and inspire many; it will inspire new confidence in man's capabilities. For others, the extension of man-mastered boundaries will increase a sense of doubt or even despair, generated by feelings of personal smallness in a big, incomprehensible world. While initially consuming major economic resources, the explorations downward and outward will be beneficial in terms of process and product spin-offs. Spin-offs will affect both man's abilities and attitudes in major ways.

b. Consequences

Society will tend to glorify technological aspects of exploration. The humanities will be seen as unproductive in contrast. The technological advances will create at least two counter-tendencies: 1) toward adequate funding in social-humanistic projects, 2) toward utilizing systems approaches in solving major human problems.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content with increasingly heavy technological emphasis, especially for the elite	a. Need to understand the social implications of explorations as well as the technological ones	a. Some efforts to increase science-mathematics competency	a. A seminar with technological-humanistic emphases
b. Some efforts to increase the humanities and social science emphases, especially for the average student	b. Need to utilize the way of thinking and behaving implicit in exploration in guiding student growth	b. Greatly increased efforts to apply a systems approach to programs	b. Use of programmed material to provide factual information
c. Increased emphasis on systems approach to problem solving		c. Major increase in efforts to help school personnel transcend provincialism of all kinds	c. Encouragement of brainstorming on relevant topics in mixed disciplines living units

Environmental Pollution

1. OVERVIEW

a. Description
With more people concentrated heavily in limited areas, the environment will become increasingly polluted, in spite of capabilities for remedial and preventive actions. Complexity, inertia, and incapability to bridge local, area, state, regional and national gaps will combine to prevent adequate improvements. This will negate some of the progress made possible by the biological and medical fields.

b. Consequences
The citizenry will suffer physically, economically, and esthetically. Too-little too-late efforts will prevent a societal breakdown, but major problems will continue.

2. EDUCATIONAL OUTCOMES	3. IMPACT ON SCHOOL PERSONNEL	4. IMPACT ON PREPARATION PROGRAMS	5. ILLUSTRATIVE RESPONSES
a. Content more heavily oriented toward conservation and health	a. Need to utilize total curriculum in societal efforts to combat environmental strangulation	a. More emphasis on the social utility of all curricular areas	a. Units on environmental improvement in existing courses
b. Physical facilities designed to create good health conditions within the schools themselves	b. Need to understand the dynamics of environmental deterioration and processes for improving conditions	b. More instruction on environmental factors and related field experiences	b. Laboratory experiences focussed on applied improvement practices
c. Provisions for extensive health services to offset environmental deficiencies	c. Need to work effectively with laymen and other professionals to create a healthy, pleasant, and a productive environment	c. More emphasis on community leadership skills	c. Teaching unit development and development in micro-teaching situations related to environmental improvements

The Challenge for Education at Michigan State University

Lack of information probably is at the bottom of society's problems. The degree to which the Michigan State University teacher education faculty can increase its knowledge about the present and future status of social needs will be the degree to which it can help its teacher education students serve the present and future educational needs. The teacher education faculty at Michigan State University plans to make every effort to be knowledgeable and realistic about the present status as well as the future status of social needs requiring educational attention. Much of what is included in our teacher educational program will stem from answers we are able to get for such questions as:

> What population characteristics do and will probably dominate?
>
> What demographic patterns have emerged and seem to be emerging?
>
> What social and cultural patterns have emerged and will emerge?
>
> What are and will be the major characteristics of changes in knowledge?
>
> What are and will be the speed and nature of social change?
>
> What are and will be the speed and direction of specific and technical innovation?
>
> What is and what will be the optimum rate of change within the elementary and secondary schools and colleges to reflect present and future social developments?
>
> How can the learning process be designed to develop intellectual power capable of coping with the nature and extent of social change?
>
> How can processes of learning and the experiences needed to foster learning be so designed that the number to be educated can be accommodated at increasing levels of quality?
>
> How can the relevant body of human knowledge be utilized to improve the process of adapting teacher education and education in general to the needs and opportunities of social change?

To find answers to these questions, alternative predictions about the future will have to be fully considered, decisions and necessary plans made so that our teacher education program can prepare effective educators. To accomplish all of this a number of things can and will be done by the Michigan State University faculty.

During the 1970-71 school year and thereafter the College of Education will sponsor periodic symposiums on the future. Persons such as the following will be invited to meet with the faculty to report on possibilities, likelihoods, and inevitabilities in short- and long-range time periods:

Daniel Bell, Columbia University sociologist, and chairman of the Commission on the Year 2000

Bertram Gross, Syracuse University, and former director of the Council of Economic Advisers

Emmanuel G. Mesthene, author of How Technology Will Shape the Future

Robert Theobald, author of Dialogue on Technology, Free Man and Free Markets, contributor to Human Values in a Society of Advancing Technology

Iwao Ishimo, Michigan State University anthropologist, and student of the future

Raymond Bauer, Harvard Business School, and editor of Social Indicators

Gerald Feinberg, theoretical physicist, and author of The Prometheus Project, Mankind's Search for Long Range Goals

Herman Kahn, mathematician, physicist and defense expert, and director of the Hudson Institute

Pierre Bertaux, member of the American Institute of Planners, and contributor to Environment and Change

Materials through which relevant scientific and technical information is disseminated will be examined regularly in order to keep abreast of the impact that such advances will have on present and future social needs affecting educational practices. Thus there will be periodic and extensive examination and translation of information retrieval materials such as statistics, technical measurements and research data relevant to aspects of educational processes. We will try to keep abreast of various document retrieval materials, be they reports, articles, books, or other documents. In all probability one person will assume the responsibility for acquiring the bulk of this information and report his findings periodically. He will compile and distribute annotated bibliographies so each faculty member can select, study and make use of the information and documents of peculiar interest to him. Some of our major sources for getting timely and relevant data about scientific and technical trends are:

ERIC
Technical Information Exchange

The Clearinghouse for Federal Scientific and Technical Information which publishes such periodicals as Government-Wide Index to Federal Research and Development Reports, U.S. Government Research and Development Reports, Technical Translations

National Standard Reference Data Systems

Defense Documentation Center

Government Printing Office

National Referral Center for Science and Technology

Smithsonian Institute's Science Information Exchange

National Institutes of Health, Office of Research Information

Scientific and Technical Aerospace Reports

Several periodicals which review timely and relevant publications, offer articles by and about futurists, and report on current and forthcoming scientific, technological and social science matters include:

The Futurists

Saturday Review

Time

U.S. News and World Report

Science

Christian Science Monitor

Fortune

Daedalus

The New Republic

Journal of American Institute of Planners

Nation Cities

The Atlantic Monthly

The American Scholar

In addition to calling in specialists in future planning, science, technology or social sciences, plus keeping up with books, articles, information or document retrieval materials, there are other goals for which we can strive, and capabilities that we can help students acquire. As an institution of higher education we will continue to deliberately and systematically develop reflective and speculative capacities of students, since present and future understanding will be at a relatively greater premium than particular knowledge. We will emphasize content in our learning experiences, and demonstrate that we can no longer lean on the world's stabilities; instead, we must be able to rely on new abilities to comfortably cope with change.[7]

Flexibility, independence and open-mindedness must characterize the style of thinking and learning evidenced by teacher education students. Our curriculum must facilitate and stimulate such qualities for coping with an unknown future. We must further help our students be masters of techniques of reasoning and problem solving, by anticipation whenever possible. The teacher education students must be aware that their actions and solutions to problems oftentimes are based on decisions involving priorities, objectives and values. Facility in problem solving and reasoning will be gained if college students have opportunities to study problem solving in seminars.

Experience in seminars, other group efforts and varied activities peculiar to the Michigan State University teacher education program should alert the student to his need to "work, almost continually at human relationships, human concern and humane care of human beings." This stress on the human and humane attitudes is due in part to brilliant advances in communication and medicine, and must coexist with the dehumanizing and impersonalizing attitudes fostered by technological order and population swells.

Somehow we must permit each student to learn in small groups some of the time, despite the fact that college enrollments will continue to jump and it will become increasingly difficult to provide staff and space to accommodate small group instruction. Aside from helping the college level student come closer to realizing more fully his academic potential, experience with small group learning sessions will help the teacher education student to appreciate his importance in the total educative process. The student of teacher education of the future cannot affort to go out into the public school and consider small group instruction a luxury. If and when small group instruction is needed in crowded public schools or colleges, each teacher education student should work toward provision for such instructional settings.

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[7] Emmanuel Mesthene. "How Technology Will Shape the Future," Environment and Change (edited by William R. Iwald). Indiana University Press, 1969, 392 p.

Attitudes and habits of self-improvement and independent learning are other qualities that we want each student to evidence. In college and out into the professional world he will continue to be bombarded with new ideas and new knowledge. Elite and specialist roles are soon to be a way of life; both result from a rising standard of living and the technological order which will increasingly characterize society. Specialization, once a haven of stability, withers in the middle of a productive life unless one can keep up with the volcano of new knowledge, new techniques, new skills. In most cases one must keep up with all this newness through independent study, self-motivation, and self-evaluation. Students must realize that their educational careers cannot end after a four year program. Adult study must be their way of life if they are to succeed as educators. Sophisticated teaching machines will speed up the learning process, automation will facilitate their research efforts; translating machines will reduce the language barrier. The student and teacher of the future will have to make use of these and other resources to improve himself as a student and educator and be effective in changing times.

Our student population, in the main, must be prepared to live and work in large cities. The trend toward strip cities, huge population belts melding together, is to continue far into the future. With this swelling mass of urban dwellers come problems that the teacher education student recognizes and must cope with. There are other problems. Overcrowding, uneducated or undereducated and unemployed persons, the educated elite, the disparity between the haves and the have-nots will affect curriculum methods and materials the teacher must use. Teachers must be prepared for different school plants. There will probably be education parks, grouping all schools from prekindergarten through college and including large libraries, art centers and activity centers. Not only will the physical plant be different, but so will the instructional materials that the children use and the curriculum and methods of teaching.

Independence, flexibility, individualism, impersonality, humaneness, specialization, rationalization, efficiency are all qualities that mark the successful teacher of the future. These are the qualities we strive to develop in teacher education students.

Sequence for Implementing Systematic Analysis of Future Society

This is to be a systematic, long-range study initiated by the faculty of the College of Education and ultimately will involve all personnel contributing to the preparation of elementary and secondary school teachers.

Purposes of studying the future will be the learning by individual faculty members and students of changes in society, and the impact of those changes on schools and teacher education institutions; building concepts and generalizations; developing new intellectual skills and abilities; and modifying old value systems and developing new ones. In the cognitive domain, activity will be at the level of analysis, synthesis, and evaluation; in affective domain, values or value complexes.[8]

Individual faculty members and students will receive fresh and deep insights into the interrelationships between teacher education and future society to make changes in teaching styles and curriculum. The intended result is a teacher education program relevant to future society.

The following sequences are proposed:

For Program Development

1. Establish an office of futurist orientation with a coordinator whose primary responsibility is to insure that all aspects of the program adapt to changing times.

2. Appoint a panel of consultants to advise the program development team on future potentialities. Such a panel should include representatives from futurist organizations such as the Rand Corporation and the Hudson Institute; from either the Educational Policy Research Centers at Syracuse University or the Stanford Research Institute; from educational technology; and elementary curriculum experts.

3. Periodically assess the BSTEP teacher education program, and its component parts, their relevancy vis-à-vis projections, and their impact on prospective teacher attitudes toward change.

4. Establish a seminar for advanced graduate students and faculty to study future trends and relate them to teacher education.

5. Other means to stimulate program change include appointments of research consultants in various disciplines, continuous formal and informal evaluation, and recycling of faculty in the program.

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[8] Benjamin S. Bloom, Ed., Taxonomy of Educational Objectives: Cognitive Domain, (New York, David McKay Co. Inc.), 1956; and David R. Krathwohl, et al, Taxonomy of Educational Objectives: Affective Domain (New York: David McKay Co. Inc.), 1964.

For Students

1. Integrate projections of future societies, alternatives, and trends into General-Liberal Education. Focus not only on cognitive projections, but on rational alternatives, needs, and the impacts of various courses of action. Simulation games, small group discussions, reading of relevant novels, and lectures by futurists, are some ways to develop students' understanding of the future and to improve their attitudes and responses in a changing society.

2. Relate future trends to teaching through Professional Use of Knowledge and Clinical Experiences components, especially as they relate to the Social Sciences.

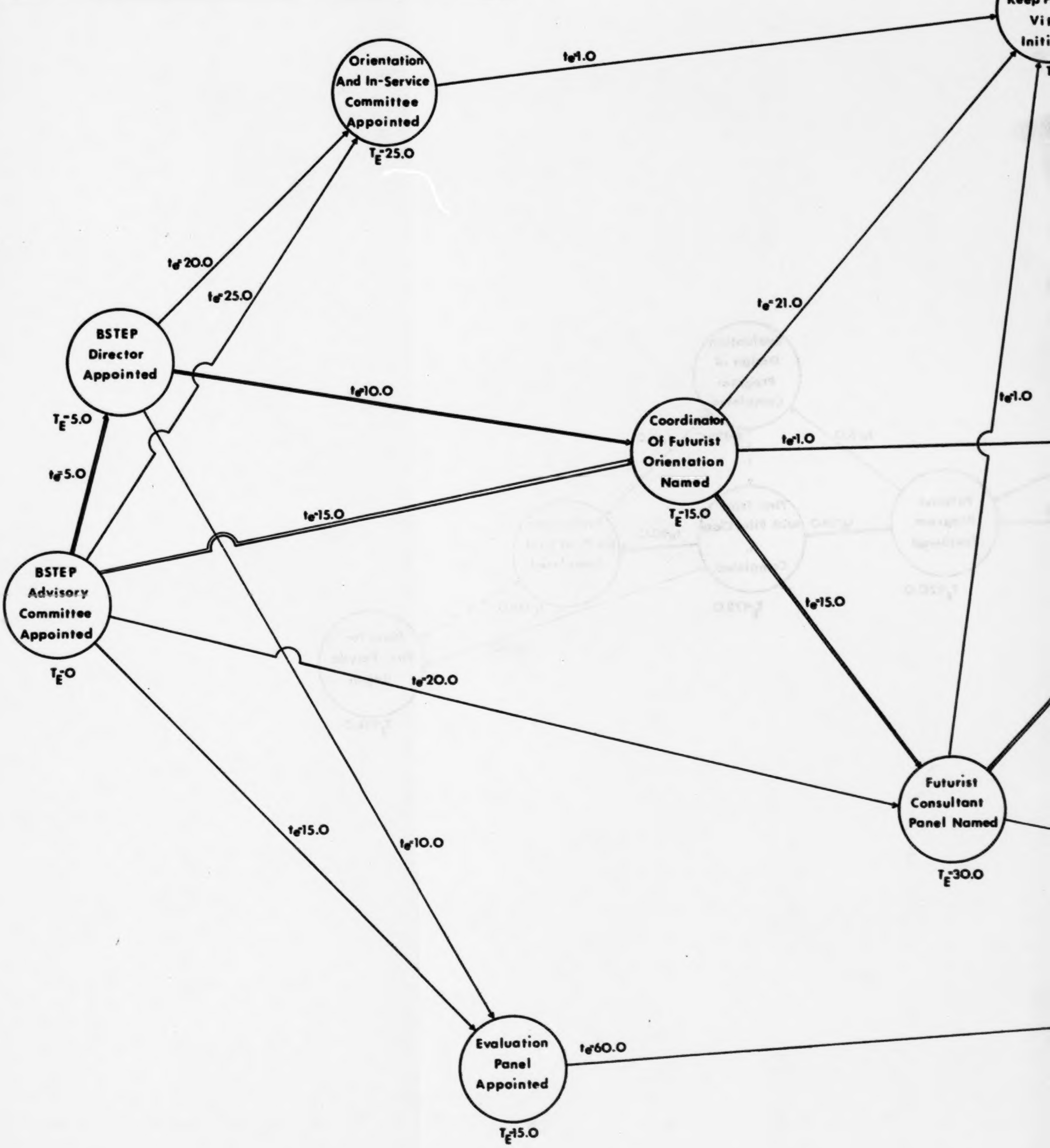
3. Sponsor periodic lectures by futurists.

Sequence of Events

1. Establish Office of Futurist Orientation within BSTEP
2. Select coordinator
3. Select consultants to panel
4. Develop a plan for integrating concepts in total program
5. Plan to be reviewed by consultant team and program development team leaders
6. Devise a seminar for staff and advanced graduate students
7. Conduct a seminar for staff and advanced graduate students
8. Program Development staff considers ways to integrate futurist goals into program
9. Evaluation team develops criteria for assessing effectiveness of program
10. Test ideas with student implementation
11. Assess program through evaluative devices and consultant recommendations
12. Redevelop futurist program
13. Begin again with 3. and proceed through 12. in cycles to keep programs relevant, timely, and forward-looking

This sequence is illustrated graphically through the PERT chart on the following page.

BSTEP IMPLEMENTATION PHASE - FUTURE ORIENTATION


Orientation And In-Service Committee Appointed
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t_e=20.0
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BSTEP Director Appointed
T_E=5.0
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t_e=10.0
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Coordinator Of Futurist Orientation Named
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t_e=15.0
BSTEP Advisory Committee Appointed
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Futurist Consultant Panel Named
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Evaluation Panel Appointed
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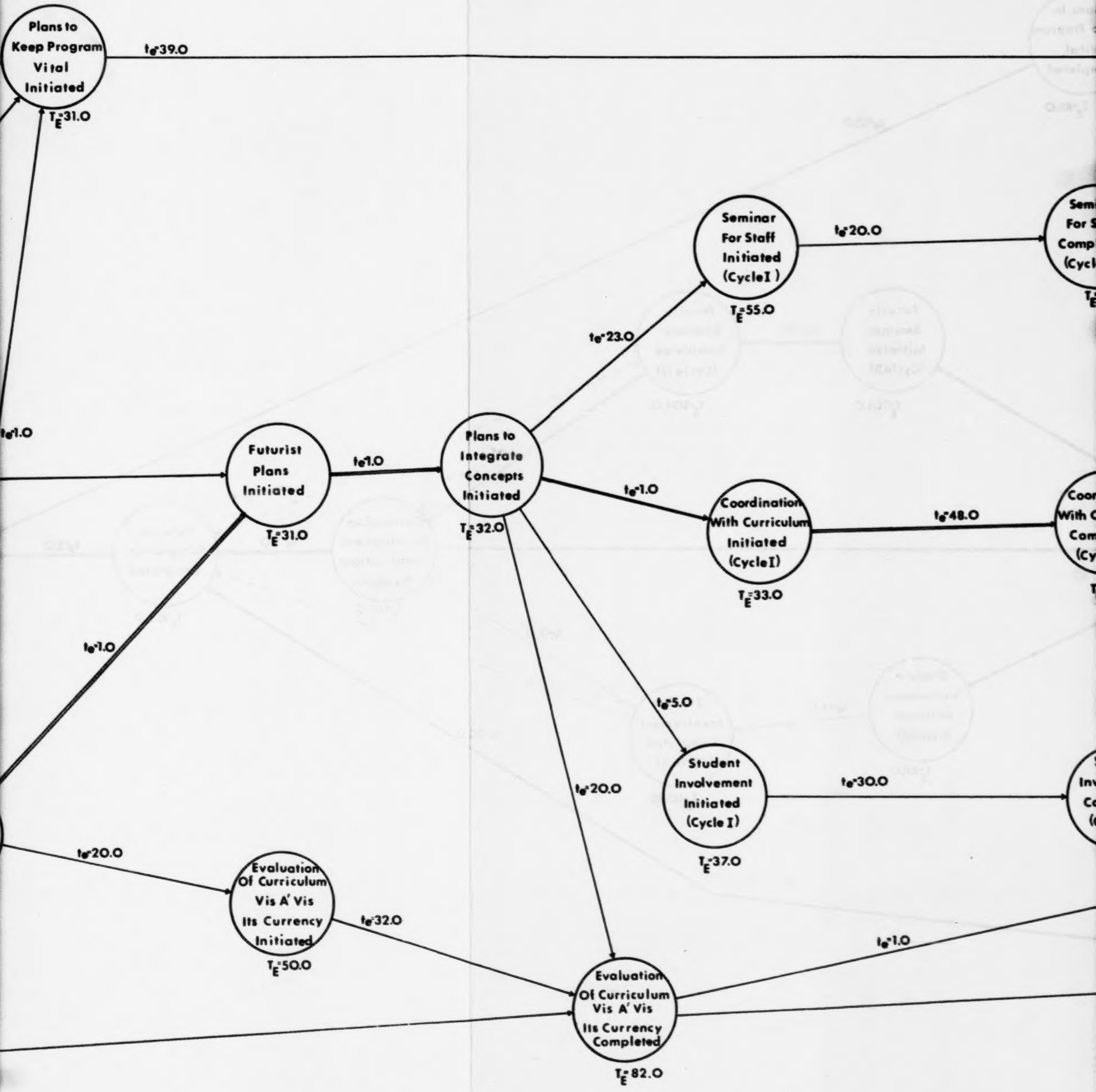
Plans to Keep Program Vital Initiated
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Futurist Plans Initiated
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Plans to Integrate Concepts Initiated
T_E=32.0
t_e=23.0
Seminar For Staff Initiated (Cycle I)
T_E=55.0
t_e=20.0
Semi For S Comp (Cycl
t_e=1.0
Coordination With Curriculum Initiated (Cycle I)
T_E=33.0
t_e=48.0
Coor With C Com (Cy
t_e=1.0
t_e=5.0
Student Involvement Initiated (Cycle I)
T_E=37.0
t_e=30.0
Inv Co
t_e=20.0
t_e=20.0
Evaluation Of Curriculum Vis A' Vis Its Currency Initiated
T_E=50.0
t_e=32.0
Evaluation Of Curriculum Vis A' Vis Its Currency Completed
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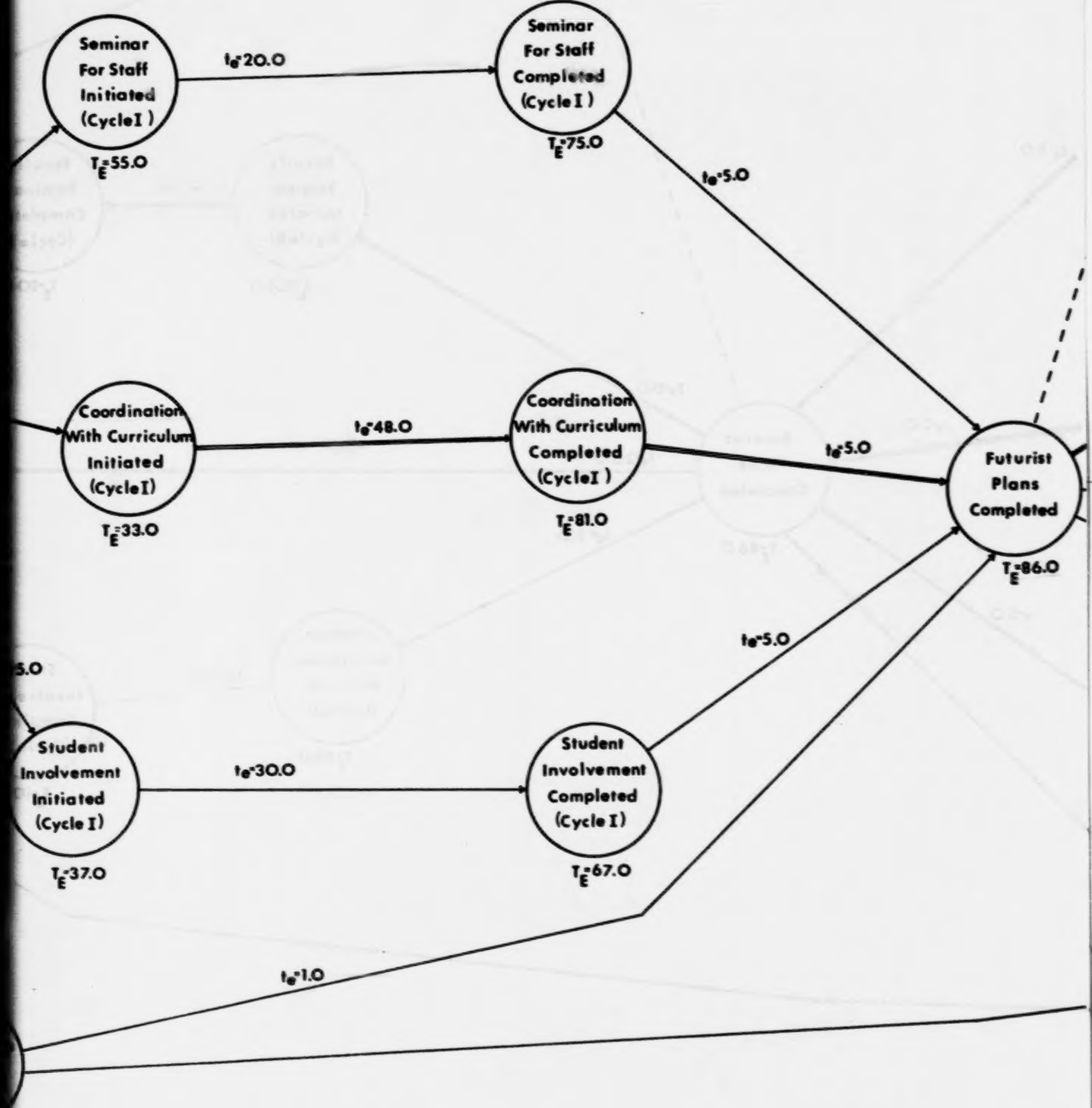
t_e=1.0

PERT Chart 6:1 Future Soci

(Page 274)



Seminar For Staff Initiated (Cycle I)
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Seminar For Staff Completed (Cycle I)
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Coordination With Curriculum Initiated (Cycle I)
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Coordination With Curriculum Completed (Cycle I)
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Futurist Plans Completed
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Student Involvement Initiated (Cycle I)
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t_e=30.0
Student Involvement Completed (Cycle I)
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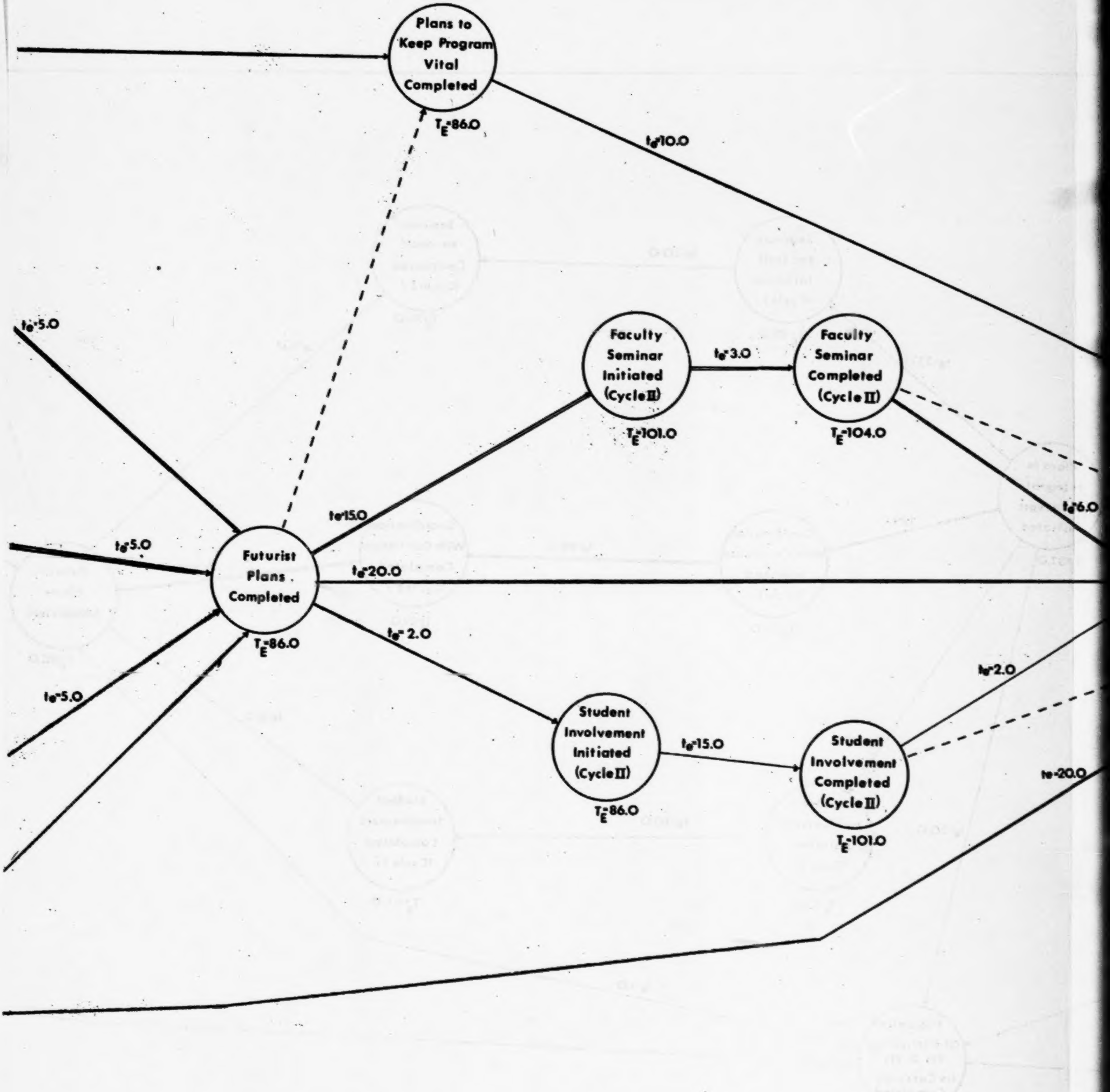
PERT Chart 6:1 Future Society

(Page 274)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Futurist Plans Completed
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Student Involvement Initiated (Cycle II)
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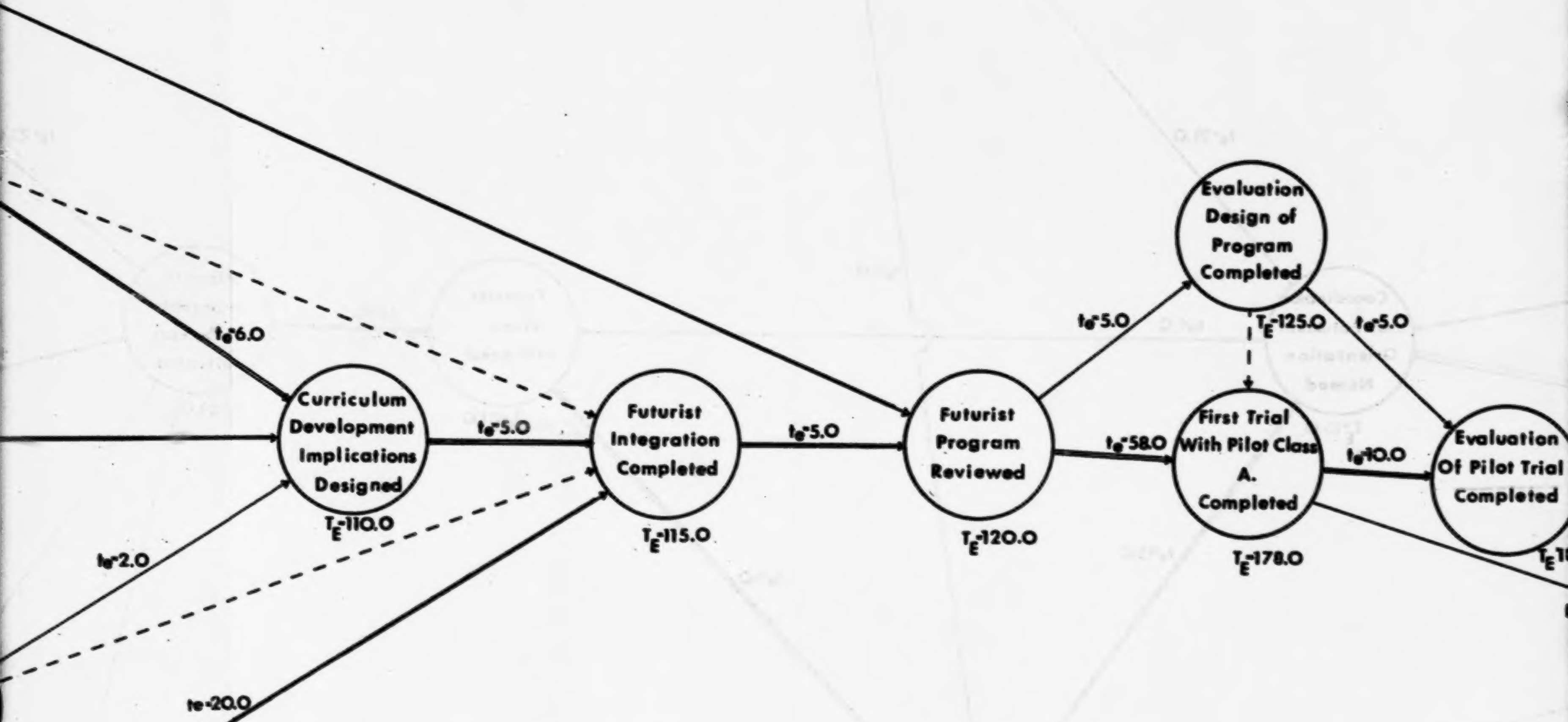

Evaluation Design of Program Completed
Curriculum Development Implications Designed
Futurist Integration Completed
Futurist Program Reviewed
First Trial With Pilot Class A. Completed
Evaluation Of Pilot Trial Completed
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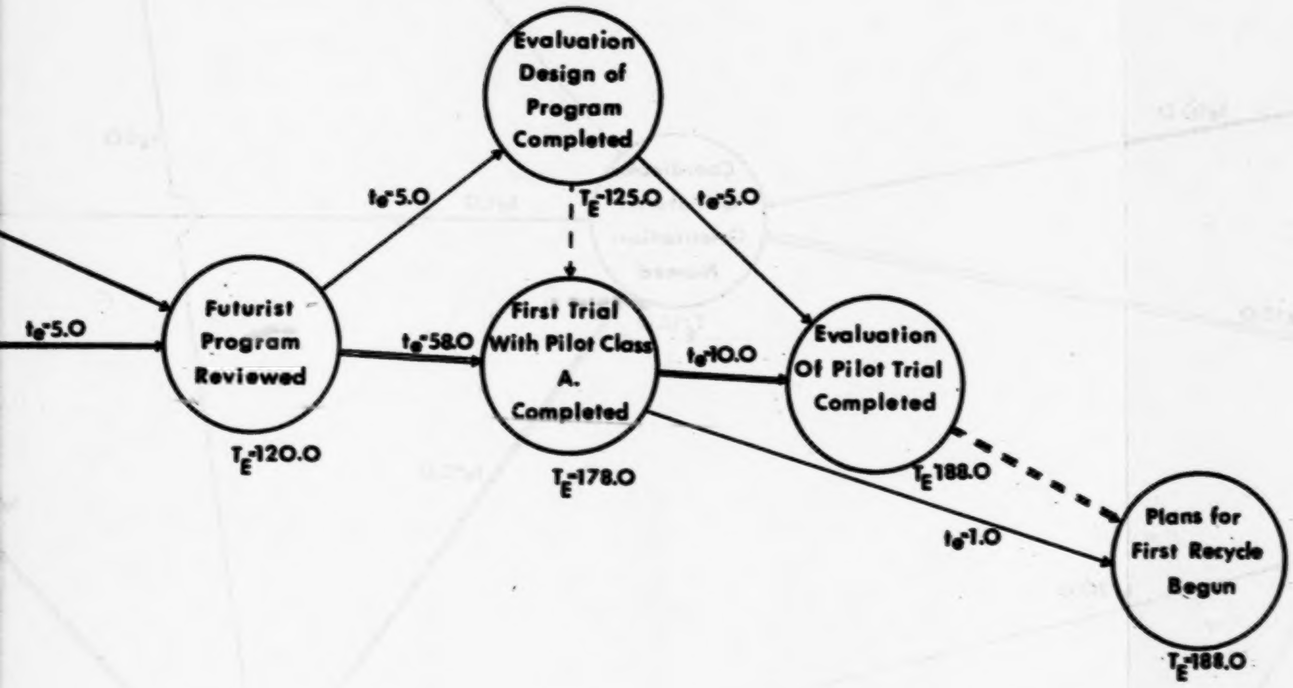
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Futurist Program Reviewed
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t_e=5.0
Evaluation Design of Program Completed
T_E=125.0
t_e=5.0
t_e=58.0
First Trial With Pilot Class A. Completed
T_E=178.0
t_e=10.0
Evaluation Of Pilot Trial Completed
T_E=188.0
t_e=1.0
Plans for First Recycle Begun
T_E=188.0

Chapter 7

FACULTY ORIENTATION AND IN-SERVICE EDUCATION

Introduction

In any field of human endeavor, recognition of a need for change in systems, operational schemes, and methodology stimulates advances. Thus a major transition in a teacher education program will require major realignments in many of the segments of the program.

In the past, teacher education programs often have been left to those directly charged with the implementation, operation, and evaluation of such programs, with the result that commitment of faculty members outside Colleges of Education to teacher preparation has characteristically been low. Unique changes in direction, scope, and particularly involvement, in the Behavioral Science Teacher Education Program offer to break existing patterns with newly conceived approaches to teacher education. By the very nature of these changes, it will be imperative that faculty members associated with the program have the opportunity for orientation to new strategies, and alteration and modification of present teaching techniques.

The key concept of clinical behavior style in BSTEP, the major function of which is to systematize the behavior of teachers, implies the need for in-service education and orientation. Clinical behavior style aspects of describing, analyzing, hypothesizing, prescribing, treating, and observing consequences of learning experiences, all create unlimited possibilities for diversity in teaching style and continuing modification and alteration of techniques. The faculty orientation and in-service education proposal is designed to:

1. Afford the opportunity for faculty members in the several disciplines to make larger commitments and assume broader responsibilities to teacher education

2. Improve knowledge of and skills in new modes of instruction as they pertain to teacher education. One of the salient features of BSTEP is the design of experience modules and supporting materials.

3. Increase ability of faculty to restructure curriculum content to better serve the needs of education. Familiarity with the modules will allow for opportunities to evaluate them and flexible modules will accommodate changes.

4. Create avenues whereby college teachers in diverse areas can influence the course of teacher education

5. Provide a better understanding of BSTEP, so that each faculty participant can see his area in relation to the entire teacher education program

6. Keep open channels of communication among professional personnel to ensure continuing revision

Who Are The BSTEP Faculty?

A large group of professional individuals, some of whom are campus-based and some of whom are field-based, constitute the faculty of BSTEP. Each of these individuals has a unique contribution to make to the toal operation, yet none can function in isolation.

Specifically, the BSTEP faculty who are campus-based are college professors in the areas of General-Liberal Education, Scholarly Modes of Knowledge, Human Learning, Professional Use of Knowledge, and Clinical Experiences. Those who are field-based are Clinic Center Directors, classroom teachers, and Intern Consultants. While the Clinic Center Directors will undoubtedly be field-based, they too are college professors. Three designations will be used in referring to BSTEP staff. The term faculty includes all personnel involved in the instructional operation of BSTEP. The term college professors applies to faculty who are campus-based and the Clinic Center Directors. Field personnel includes Clinic Center Directors, classroom teachers, and Intern Consultants.

Rationale For Faculty Orientation and In-Service Education Program

The unique characteristics of BSTEP provide guidelines for planning the program of orientation and in-service education of faculty who will be involved with BSTEP students. Just as BSTEP embodies a wide spectrum of opportunities for students to learn through different modes, so should the program for faculty assist them in understanding and expediting BSTEP. Therefore, the program which is designed to orient faculty to BSTEP and to ensure continuous quality and efficiency in BSTEP operation will be characterized by opportunities for participating faculty members to engage in independent study, utilization of various media, team experiences, large group participation, and the like. The program for faculty, as proposed here, will utilize every aspect of learning embodied in BSTEP.

The rationale for this approach is based on the assumption that if faculty members have opportunities to engage in the same types of learning activities as do the students, the faculty can more effectively internalize the basic concepts of the total BSTEP.

Assumptions

Further assumptions are essential to the rationale of the faculty program.

General Assumptions

1. That college professors have the potential to adapt and modify their teaching styles

2. That college professors feel the need for and desire to alter their teaching approaches in order to experiment with innovative programs

3. That college professors and field personnel will welcome opportunities for interaction and to engage in activities which will ensure not only their own continued professional growth but also the continuous refinement of programs and teaching strategies

4. That scholars in the various disciplines are committed to sharing knowledge with the public at large and that they view pre-school and elementary education as an avenue for disseminating such knowledge

5. That it is essential that pre-school and elementary teachers gain an understanding of the various disciplines and grasp the relationship of the need for a General-Liberal Education in the profession of teaching

Specific Assumptions Related to BSTEP at Michigan State University

1. That all BSTEP faculty are committed to the education of the general layman in the various disciplines and to the training of excellent and committed elementary teachers

2. That each of the areas involved in the BSTEP program (General-Liberal Education, Scholarly Modes of Knowledge, Human Learning, Professional Use of Knowledge, Clinical Experiences) will designate certain individuals who can provide continuing leadership for the BSTEP program

3. That in the initial stages of the BSTEP operation, faculty members will be those who were involved in writing the initial modules, and that these individuals will in turn be teamed with newly designated faculty members from specific areas

4. That faculty participation in BSTEP will be viewed as an extremely important scholarly contribution, and that such participation will receive due consideration with reference to tenure, promotion, and sabbatical leaves

5. That faculty members involved in the initial implementation stages of BSTEP in any given year be provided, during the terms preceding such appointment, with released time for the purpose of pilot-testing modules, refining modules, working with teammates, program planning, and participation in orientation and in-service activities

6. That faculty members understand the interrelationship of every part of BSTEP. As an example, faculty involved in the Scholarly Modes of Knowledge and in the Professional Use of Knowledge should understand the reciprocal contributions of their areas to the total process of elementary education

7. That while the specific design of the program as outlined must deal with the experimental BSTEP operation, it can be adapted to a university setting in which all elementary education majors could be involved

Components of the Orientation and In-Service Program

Orientation and in-service procedures are designed to bring about change in attitudes and teaching behavior of the professors and other personnel who are responsible for the implementation of BSTEP. The program utilizes a variety of techniques and foci on learnings deemed vital to successful implementation. Emphasis is on critical review and revision as needed of all aspects of BSTEP, with participants' evaluation and self-examination. Persons involved in the orientation program will be encouraged to identify problems and concerns related to BSTEP, study them, propose solutions, implement solutions and assess results. As part of self-examination, participants will assess their beliefs and responsibilities in teacher education. A second aspect of self-examination will be the analysis of individual teaching behavior to determine its effectiveness in stimulating learning and its merit as a model of behavior for the teacher-in-training.

In-service proposals are based on the concept that behavior is most likely to be changed when:

1. Individuals sense a problem or feel a need for some change in themselves or their environment

2. Persons expected to change behavior are involved in determining where change is needed and the processes by which change can occur

3. Major decisions about the elements of change are made by the persons expecting to implement and maintain the new behavior

The in-service program for BSTEP faculty should be planned and executed, therefore, by the faculty through committees or designated representatives.

It is assumed that the best learning experiences are those that are self-initiated and relevant to the task that the individual is expected to perform. Consequently, the proposed in-service activities are suggestive of procedures that might be utilized by faculty to improve their own teaching strategies.

Study Conference to Orient Faculty to BSTEP

Time: Preferably two terms prior to implementation

Purposes of conference:

1. To re-examine the roles and responsibilities of different personnel, facilities, and resources of the university in teacher education

2. To enable participants to obtain knowledge about the BSTEP

The conference will first initiate a continuing effort to develop or increase participants' commitment to teacher education and second inform personnel about the total BSTEP effort as well as increase their understanding of single components in which they will be working.

Experiences for participants:

1. Members of the faculty and consultants will present two or three position papers on the role of the University in the

education of elementary school teachers

2. Conference participants will react to these papers as an initial step toward defining their individual roles in the education of teachers

3. Conferees will make self-evaluations of their roles in and attitudes toward elementary teaching and the training of teachers

4. Through lectures, demonstrations, and instructional media, BSTEP will be presented clearly and concisely. Participants will react to the program by responding to guide questions and through open discussions.

5. Participants will work through four or five specially prepared modules which will be designed to increase their understanding of the learning content of BSTEP and to acquaint them with the basic learning modes utilized.

Modules will be developed for faculty participants. The following illustrate objectives upon which modules might be based:

Identify the basic concepts in linguistics which BSTEP students are expected to master

Indicate the degree to which concepts taught in linguistics are applied in the reading methods modules

Classify the modules in clusters according to student involvement: passive, semi-active, or active

6. In small groups, faculty from the same or related disciplines or Scholarly Modes will evaluate the program components in their domain.

7. Toward the close of the conference, participants will make recommendations regarding BSTEP and faculty needs and concerns related to further in-service education.

Independent Study and Self-Improvement

Independent Study and Revision of Components of BSTEP. If a faculty member is to maintain his traditional Professional privilege to determine what and how to teach, he must be free to criticize and recommend changes in the total BSTEP, and to make major decisions about the components for which he is responsible.

Time: Any one or two quarters preceding involvement in BSTEP

Purpose of conference:

To give each faculty member opportunity to examine, criticize, revise, and extend BSTEP, particularly in the area in which he will be working.

Experiences for participants:

The analysis of BSTEP components will comprise such activities as the scrutiny of the major concepts or behavior included, the organization of the learning experiences, and the modes of learning utilized.

Faculty members not acquainted with recommended materials or techniques will have access to them for study.

To assure maximum faculty input into separate components and the total program, avenues will be provided whereby faculty can make recommendations in regard to their own and related areas.

Independent Study of Teaching Models through Packaged Materials

Many BSTEP faculty will need to augment their knowledge of Clinical techniques that are basic to BSTEP, such as:

1. Behavioral objectives
2. Modular elements
3. Evaluation techniques
4. Simulation
5. Behavioral science emphases

Time: One or two terms preceding BSTEP operation

Purpose of study:

To give each faculty member opportunity to study and understand the clinical behavior style

Experiences for participants:

Packages of materials, which can be obtained or developed for faculty use might consist of film and guide sheets. This material will be developed by the Coordinator for Faculty Orientation and In-Service Education and the Faculty Committee in cooperation with the Instructional Resources System of BSTEP.

Experience In An Elementary School

Time: As soon after the initial large group conference as feasible

Purposes of experience:

Visitation and structured observations in an elementary school will provide professors an opportunity to see what contemporary elementary education is and to consider what it ought to be or might become. Many college teachers, unless they have been directly involved in teacher education, have never considered elementary education analytically. University professors may not have had frequent or recent contact with an elementary school. Such experiences will enable a professor to consider the unique relationship or potential contribution of his discipline to the learning of young children and the education of teachers.

School visitations provide BSTEP faculty opportunities for exposure to current operations in the elementary school, and serve as a stimulus for developing faculty commitment.

Experiences for participants:

The School Observation will include a pre-visitation conference, the visitation, and a post-visitation conference.

1. The pre-visitation conference will provide primarily essential information about the school(s), organizational matters pertaining to the visitation, and purposes to be accomplished through the visits.

2. The visits should be problem-oriented as much as possible. For example, the observers might try to collect data and respond to questions, such as, "What is the relationship between my discipline (or area of specialization) and what is happening in this classroom?" or "What is the potential contribution of my discipline to the education of young children or to the education of teachers?" "What evidence is there that children are really interested in my discipline?" The visitation should consist of a minimum of one day spent in one school; however, additional visitations should be available to those desiring more contact.

3. The post-visitation conference will provide BSTEP faculty participants an opportunity to react, share their experiences, and propose action which the University might take in order to improve elementary education.

Pilot Testing of Clusters of Modules

Time: One or two terms prior to implementation of BSTEP

Purpose of testing:

Pilot-testing clusters of modules will enable the instructor to learn about the content of the instructional materials, the processes for utilization, and to critically analyze the modules. Pilot-testing is effective in implementing innovations. The users of the innovation are able to learn about the new element in somewhat limited and perhaps less-threatening situations than would exist if a full-scale venture were launched.

Experiences for participants:

Ideally, in the first pilot testing of modules the instructor should team with the developer of the modules. However, any individual could test a cluster or clusters in an appropriate component independently. Part of the testing process should be the development of new modules or the revision of existing modules. Since evaluation of the modules is one of the functions of pilot testing, feedback should be obtained from the students regarding their assessment of the learning experiences.

Simulation Experiences for Faculty in BSTEP Operation (BSTEP-O)

Time: Term preceding BSTEP implementation

Purpose of simulation:

To provide faculty with a concrete experience in BSTEP in a non-threatening environment; to expose faculty to some of the potential problems and issues that may arise in BSTEP; and to bring BSTEP faculty together in a face-to-face situation in which they will work on common concerns.

Experiences for participants:

For one week, BSTEP faculty and a small group of students (approximately 20-25 selected from a sophomore class) would assemble at Gull Lake or similar location and simulate parts of BSTEP. The following types of BSTEP-O activities are recommended:

1. Students will be introduced to the modular concept of learning and select and work through illustrative modules.

2. Faculty will engage in micro-teaching as they instruct a small group of students in one or more modules.

3. Faculty will examine their own teaching behavior(s) in terms of interaction analysis or some other system.

4. The standing committees of BSTEP will meet regularly, the student council will convene, and administrators will assume their respective roles. All will deal with simulated problems related to BSTEP.

5. Faculty will counsel students regarding registration and other problems related to choosing teaching as a life career.

Summary

Preparation for a successful simulation in BSTEP-O will be time-consuming and costly. Problems that are likely to occur in the future must be identified and simulated materials and situations prepared for each. Examples of possible problems include:

A professor who agreed to participate in BSTEP but continues to teach in conventional lecture style

A professor who verbalizes his commitment to student independence and performance learning, yet tends to value, and include in his evaluation of students, primarily those learning activities in which the professor has control and the student is passive

Students tending to concentrate on modules which emphasize independent learning to the neglect of lectures with the result that the professor complains about how little students are learning becuase they are not attending class

Student complains that the program is too heavy and makes a recommendation that some of the time-consuming modules be dropped

Through the BSTEP-O experience, faculty will have an opportunity to learn interaction analysis and micro-teaching techniques by applying them to their own behavior. In addition, program simulation should encourage early evaluation which should lead to decisions for modification of the organizational structure. In all areas, faculty will be able to confront problems that arise when specialists in the various disciplines are expected to devote time to teacher education which may result in less time for scholarly inquiry into their own fields. Thus, while BSTEP-O is the most costly, it is the most essential ingredient of in-service education for faculty.

Requisites for Faculty Participation

Essential requisites for effective faculty participation in BSTEP include the following:

1. Faculty involvement in BSTEP must be given proper recognition in the consideration of tenure, promotion, and sabbatic leaves in the home departments of the concerned faculty members. To refute this rationale would be to deny the stature that this endeavor should command.

2. To ensure a smooth continuum from the preservice orientation period to the time of active participation in the program, there should be an early designation of faculty members to be included in BSTEP for each year. Such designation should occur no later than the winter term preceding the year of participation. It is further suggested that field personnel be designated concurrently with those on campus.

3. Those faculty members selected to participate in the BSTEP operation should be given appropriate released time for planning, constructing and evaluating those segments of the program wherein their responsibilities lie.

4. Provision should be made for continuity of leadership in each of the affiliated colleges. Leadership personnel should maintain liaison with other segments of the program for at least four years. This would not necessarily require an active role at all times in the BSTEP operation, but it would establish a focal point for dissemination of essential information.

5. Responsibility for implementing and carrying out the orientation and in-service education should be vested in a faculty committee composed of one member from each of the following areas: Scholarly Modes of Knowledge, Human Learning, General-Liberal Education, Professional Use of Knowledge, and Clinical Experiences. This committee would be responsive and responsible to all members of the faculty and be in a position to effect desirable changes and modifications. To assure realistic completion of its tasks these committee members should be provided with appropriate released time.

6. The responsibility for coordinating the program of faculty orientation and in-service education should rest with a Coordinator for In-Service Education of Faculty. This coordinator would work with the faculty committee in order that they might carry out their responsibilities.

Identification of Faculty

The established rationale for the faculty orientation and in-service program provides a framework for developing a feasible plan for faculty participation, whether they are college-based or field-based.

The following outline indicates the faculties to be involved at succeeding steps throughout the initial implementation stages of BSTEP at Michigan State University.

Winter and Spring Terms, Pre-Implementation Period

During the Winter Term of the Pre-Implementation Year, three faculty groups will form the nucleus of the first faculty orientation group:

Directly involved faculty in the first year of implementation. It will be necessary to identify, at the earliest possible date in the winter term of the pre-implementation year, those faculty members who will be directly involved in the operation of BSTEP during the following school year. Specifically, the involved faculty will be those who will work with the 100 freshmen students in the General-Liberal Education areas, Human Learning, and Clinical Experiences. During the winter and spring quarter of this pre-implementation period, these faculties will engage in the preparatory activities outlined in the section dealing with components of the program for faculty.

Representatives of Faculty to be Involved during the Second Period of Implemention. In addition to the specific faculty members identified above, other representative faculties need to be identified during the winter term of the pre-implementation period. Individuals in this group may merely represent an area or component concerned with the BSTEP operation, but should include some of the writers of the original BSTEP modules. These representatives will be faculty from:

Scholarly Modes of Knowledge (all components)

General-Liberal Education (all components)

Professional Use of Knowledge (all components)

The rationale for identifying these representatives at this early date, even though those segments are not planned to be implemented until the second and third school year, is in the interest of achieving continuity in faculty orientation.

Activities for this representative faculty group will parallel those of the faculty who will be directly involved in the first year of BSTEP implementation.

Clinical Setting Representatives A third group of faculty to be identified and involved at this early stage are representatives from the Clinical Centers. These representatives may be the Clinical Center Administrators, Intern Consultants and Classroom Teachers.

Implementation Period 1

During Implementation Period 1, it will be necessary for faculties actively engaged in the BSTEP program to be involved in the in-service education activities. Similar and concurrent activities will be engaged in by representatives of other areas as outlined above.

Winter, Implementation Period 1

Faculties to be identified during early winter term of Implementation Period 1 will be those directly involved in the BSTEP Operation during Implementation Period 2. These will include not only faculties who will work with the second year BSTEP students, but also any newly-designated faculty who will be working with the incoming 100 freshman students. Orientation and in-service activities for this group will follow the procedure outlined.

Implementation Period 2

Faculty to be identified during early winter term of Implementation Period 2 will include those persons who will be working in components of Professional Use of Knowledge, Scholarly Modes of Knowledge, General-Liberal Education, and elementary classroom teachers who will serve as coordinating teachers for the Clinical Experiences of the BSTEP students during Implementation Period 3.

In addition, Intern Consultants who will work with these same students during the Implementation Periods 3 and 4 (intern year) should be identified at this time. Thus, consultants will be involved in orientation and in-service activities during winter and spring of Implementation Period 2, will continue to interact with the various BSTEP faculties during Implementation Period 3, at which time they will work with BSTEP students in the Clinical Experiences 3, and then go on to in-service activities during Implementation Period 4, the first of the BSTEP intern years.

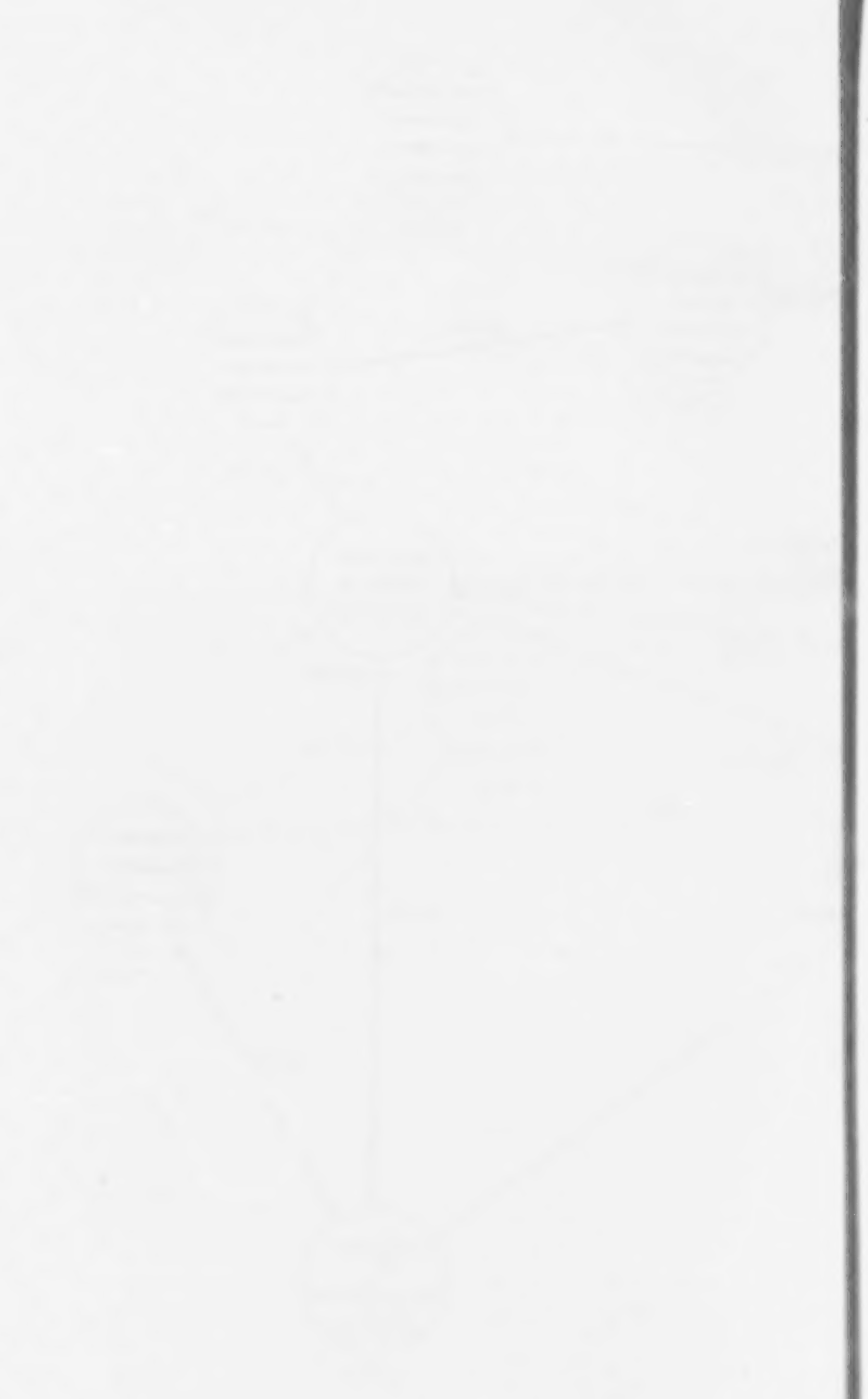
Summary of Faculty Identification

All BSTEP faculties will have been involved in orientation activities by the end of spring term of Implementation Period 2. From this point on, all faculties will be identified during the winter term of the year preceding active involvement in BSTEP.

The pattern of faculty involvement for initiating the BSTEP program is summarized in Table 7:1. A PERT chart for the Pre-Implementation Period for Faculty Orientation to BSTEP may be found on the following page.

TABLE 7:1 INDENTIFICATION AND ORIENTATION ACTIVITIES OF FACULTY

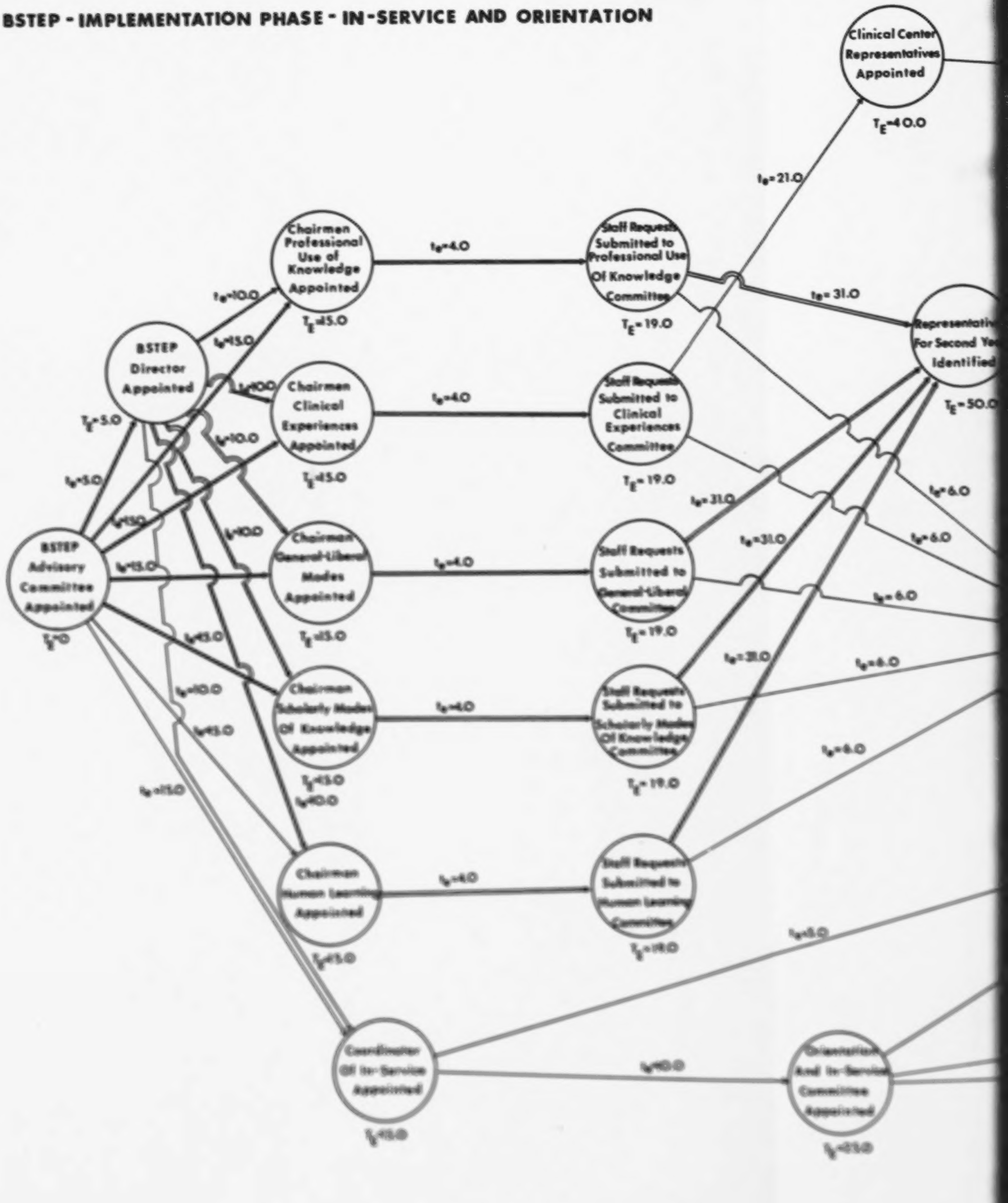
PRE-IMPLEMENTATION PERIOD		IMPLEMENTATION PERIOD 1			IMPLEMENTATION PERIOD 2		
Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
Identify active faculties for IP-1	Orientation for school visitation	Evaluation and planning sessions	Identify faculty for IP-2		Planning and Evaluation	Identify all faculties for IP-3	
Identify representatives of areas to be involved in IP-2	Visitation to elementary schools	Informal activities	Implement procedures for elementary school visitation for faculty		Informal activities	Identify cooperating classrooms teachers for IP-3	
Identify clinical setting representatives	Follow-up conference on school visitation	Revision and refinement of modules	Small and large group sessions		Revision and refinement of modules	Identify Intern Consultants for IP-3 and IP-4	
Large group orientation session for all faculties			Informal activities				
Revision and evaluation of modules Pilot-test modules for IP-1			Revision and evaluation of modules Pilot-test modules for IP-2			Revision and evaluation of modules Pilot-test modules for IP-3	
	BSTEP-O (simulation experience for all BSTEP faculty)			BSTEP-O			BSTEP-O Assessment of first two years, Orientation for Clinical and Intern year



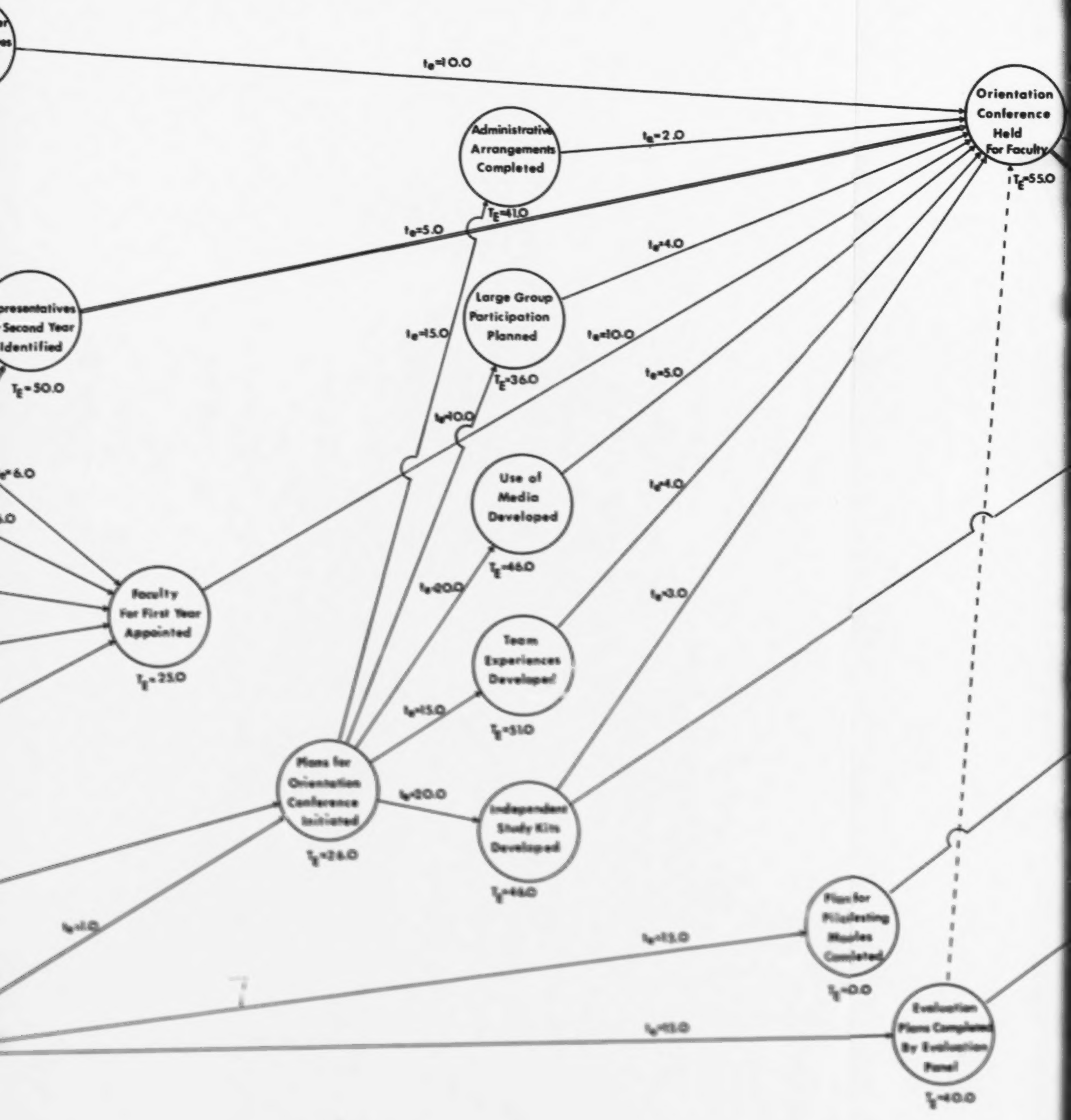
PERT Chart 7:1 Faculty Orientation and In-Service Education

(Page 290)

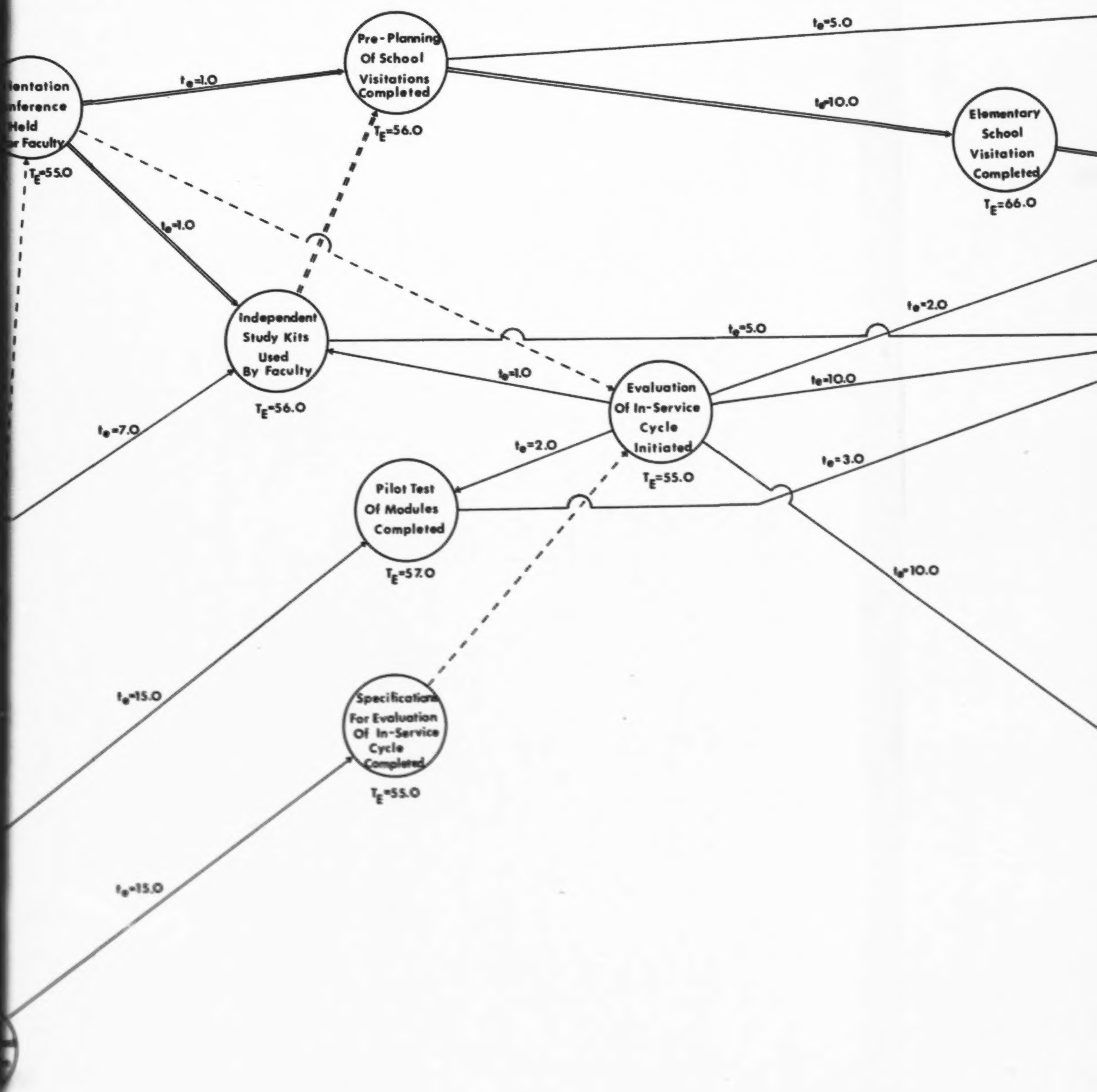
BSTEP - IMPLEMENTATION PHASE - IN-SERVICE AND ORIENTATION



Clinical Center Representatives Appointed
T_E=40.0
t_e=21.0
Chairmen Professional Use of Knowledge Appointed
T_E=15.0
t_e=4.0
Staff Requests Submitted to Professional Use Of Knowledge Committee
T_E=19.0
t_e=31.0
Representativ For Second Ye Identified
T_E=50.0
t_e=10.0
t_e=15.0
BSTEP Director Appointed
T_E=5.0
t_e=10.0
Chairmen Clinical Experiences Appointed
T_E=15.0
t_e=10.0
t_e=4.0
Staff Requests Submitted to Clinical Experiences Committee
T_E=19.0
t_e=5.0
t_e=15.0
t_e=10.0
t_e=31.0
t_e=6.0
t_e=6.0
BSTEP Advisory Committee Appointed
T_E=0
t_e=15.0
Chairman General-Liberal Modes Appointed
T_E=15.0
t_e=4.0
Staff Requests Submitted to General-Liberal Committee
T_E=19.0
t_e=31.0
t_e=6.0
t_e=15.0
t_e=10.0
t_e=15.0
Chairman Scholarly Modes Of Knowledge Appointed
T_E=15.0
t_e=10.0
t_e=4.0
Staff Requests Submitted to Scholarly Modes Of Knowledge Committee
T_E=19.0
t_e=31.0
t_e=6.0
t_e=6.0
t_e=15.0
Chairman Human Learning Appointed
T_E=15.0
t_e=4.0
Staff Requests Submitted to Human Learning Committee
T_E=19.0
t_e=5.0
Coordinator Of In-Service Appointed
T_E=15.0
t_e=10.0
Orientation And In-Service Committee Appointed
T_E=25.0



t_e=10.0
Orientation Conference Held For Faculty
T_E=55.0
Administrative Arrangements Completed
T_E=41.0
t_e=2.0
t_e=5.0
presentatives Second Year Identified
T_E=50.0
t_e=4.0
Large Group Participation Planned
T_E=36.0
t_e=15.0
t_e=10.0
t_e=5.0
t_e=10.0
t_e=6.0
Use of Media Developed
T_E=46.0
t_e=4.0
Faculty For First Year Appointed
T_E=25.0
t_e=20.0
t_e=3.0
Team Experiences Developed
T_E=51.0
t_e=15.0
Plans for Orientation Conference Initiated
T_E=26.0
t_e=20.0
Independent Study Kits Developed
T_E=46.0
t_e=1.0
t_e=15.0
Plan for Pilottesting Modules Completed
Evaluation Plans Completed By Evaluation Panel
t_e=15.0
T_E=40.0


ientation
nference
Held
r Faculty
$T_E=55.0$
$t_e=1.0$
Pre-Planning
Of School
Visitations
Completed
$T_E=56.0$
$t_e=5.0$
$t_e=10.0$
Elementary
School
Visitation
Completed
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$t_e=1.0$
Independent
Study Kits
Used
By Faculty
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Evaluation
Of In-Service
Cycle
Initiated
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Pilot Test
Of Modules
Completed
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Specifications
For Evaluation
Of In-Service
Cycle
Completed
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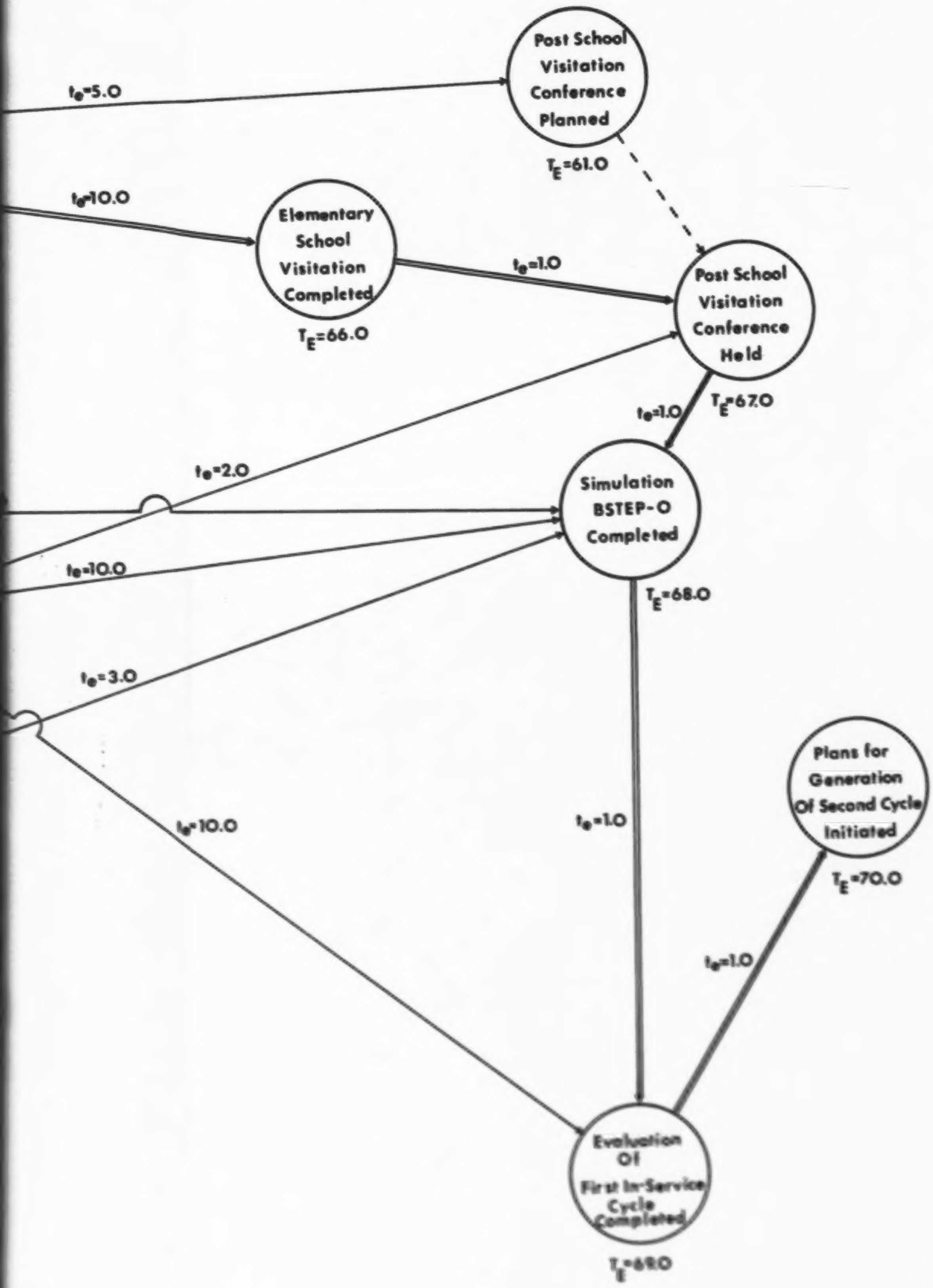
$t_e=15.0$



t_e=5.0
Post School Visitation Conference Planned
T_E=61.0
t_e=10.0
Elementary School Visitation Completed
T_E=66.0
t_e=1.0
Post School Visitation Conference Held
T_E=67.0
t_e=1.0
t_e=2.0
Simulation BSTEP-O Completed
t_e=10.0
T_E=68.0
t_e=3.0
Plans for Generation Of Second Cycle Initiated
T_E=70.0
t_e=10.0
t_e=1.0
t_e=1.0
Evaluation Of First In-Service Cycle Completed
T_E=69.0

Table 7:1 represents only the pattern for identification, orientation, and in-service education of faculty during the Pre-Implementation and first two years of BSTEP. By terms in the school year when BSTEP is fully operational, the general organizational plan is as follows:

Winter Term

1. Identify all faculties, both campus- and field-based, to be involved in the BSTEP operation for the ensuing year. In the case of Intern Consultants, this identification should take place two years prior to the student's placement in internship

2. Group session for orientation of newly-designated faculty; opportunities for BSTEP experienced faculty to interact with newly designated faculty; and continuous revision and refinement of the program

3. Visitations to elementary schools, an activity that may cut across winter and spring terms, and may include experienced as well as newly designated faculty

Spring Term

1. Group sessions which bring all BSTEP faculty together for evaluation and planning.

2. Continuous revision of modules and program components

Fall Term

Planning and Evaluation sessions for the on-going operation of BSTEP. Social interaction is unquestionably an essential ingredient in the successful operation of the Faculty Orientation and In-Service Education program. It is strongly recommended that some provision be made for BSTEP faculties to come together in informal as well as formal settings in order to ensure the continuous refinement of the program.

Evaluation of the BSTEP Faculty Orientation and In-Service Education Program

The program of Faculty Orientation and In-Service Education which has been proposed for BSTEP is designed for continuous analysis of both program and performance of participants. During the implementation years, there is provision for evaluation of the faculty in-service program at the end of each of the first three years, an important feature of the BSTEP-O proposal. Further, continuous evaluation and revision of components of BSTEP is an integral part of the proposal for Faculty Orientation and In-Service Education.

Several facets of evaluation are included in the program for faculty. Not the least important of these is that provision be made throughout the plan for constant feed-back which should automatically lead to refinement and revision of the in-service program for faculty. A major criterion for judging the effectiveness of the Faculty Orientation and In-Service Education program will be the degree and quality of the recommendations which are made by the faculty.

Evaluation of the program for faculty in BSTEP will not be distinct from evaluation of the total operation of BSTEP. Since BSTEP is a performance-based program, continuous refinement and revision of both modules and teaching strategies must take place. The Research and Evaluation domain of BSTEP should incorporate in its operation provision for continuous evaluation of the program for faculty orientation and in-service education. The faculty will need to have opportunity to react to provisions which are made for their own self-improvement. Means for such reaction should be more than an informal process. Formal processes for evaluation of the program for faculty should include the utilization of evaluation instruments designed to solicit specific reactions and recommendations. It is recommended that a task force be identified during the Pre-Implementation Period to develop such evaluative instruments. Evaluation should be systematic and provide the means for maintaining the viability of the program for BSTEP faculty.

SECTION IV

GENERAL ADMINISTRATIVE DESIGN

Behavioral Science Teacher Education Program

MICHIGAN STATE UNIVERSITY

1969

SECTION IV GENERAL ADMINISTRATIVE DESIGN

Introduction

The supporting administrative and organizational framework for developing BSTEP is described in this section. The basic objective of these task forces was to design a production and testing organizational unit to maintain necessary flexibility in an innovative program that could be readily extended to students beyond the experimental groups.

Large universities include numerous specialized resources, services, and personnel upon which an experimental program can draw. These resources, not typically available in smaller institutions, can enhance the production of a multi-faceted, innovative curriculum, while the product of that endeavor could be used by smaller colleges lacking the extensive facilities. The many inputs to the program development cycle require an administrative unit in MSU which can effectively mobilize them.

The organizational and administrative procedures described in Chapter 8 were designed to function in a large university. The plan evolved from consultations among faculty and administration of seven colleges and with the central university administration. This procedure of broad involvement is necessary in any institution where cooperative arrangements are desired. While the specific plan described in Chapter 8 may have little direct relevancy for other colleges and universities, it may serve as a prototype model, while the procedures utilized in its development may be helpful in projecting the unique structure for their own institution.

A major aspect of the BSTEP organization is the Clinic-School Network. Since it was given significant attention in the Phase I report, the present study only touches on this important area. For several years, MSU has evolved numerous reciprocal agreements with public schools through 17 regional student teaching centers, 6 continuing education centers, consultant services, and most significant to BSTEP, 11 Elementary Intern Program Centers. EIP has contractual agreements with 52 school districts, including provisions for employing and paying nearly 300 interns and their consultants, furnishing program space, and providing consultant services. Experience with this functioning network provides the basis for the Clinic-School Network.

Within the organizational structure, the major unit is that of program development. The others are far less extensive and are consultative to and supportative of program development. Two of these, analysis of future societies and faculty orientation and in-service education have previously been described. In this section, three other units are projected: selection and retention of students, information retrieval system, and evaluation and benefit/cost system.

Selection and retention of students for a new program, described in Chapter 9, involves publicity procedures, selection procedures, and methods for advising students once in the program. In projecting a new program, experience from previous similar ventures could eliminate some pitfalls; therefore the task force responsible for this area studied the student patterns in one of the recently opened residential liberal arts colleges in MSU. Statistics and figures derived from that study are projected to BSTEP.

Selecting students who are representative of the population, meet the requirements of the research and evaluation system, and provide for program selection by students are also examined in this chapter. Finally, selective retention of students supported by an active advisement system is provided for.

In the personalized, behaviorally-oriented system advocated in BSTEP, an extensive record system is needed to encompass the pattern of experiences, successes, and failures which characterize each student's participation. The information processing power of a computer-stored information storage and retrieval system as discussed in Chapter10 can be utilized to establish a student record system, to trace progress in the program and to provide basic data for program evaluation. Such a system was projected and employed during Phase I. During this second phase, alternate procedures for information storage and retrieval are explored.

The Information Retrieval Subsystem would function during implementation as a service operation of the program. During implementation, some responsibilities of this system would be to:

1. Identify critical data required by the various areas of the program

2. Determine procedures for rapid communication of data

3. Create a data chart file useful to students, program faculty, and university personnel

4. Adapt functioning parts of other information retrieval systems to improve the BSTEP model

5. Store project data necessary for programs and student evaluation

The evaluation and benefit/cost system would be adapted, during implementation, by mobilizing the necessary instruments, personnel, and analytical techniques to observe, measure and assess all pertinent aspects of BSTEP. It would have the primary responsibility for providing the research data necessary for determining the efficiency of the entire system . Chapter 11 discusses the Evaluation and Benefit/Cost System. The development of a satisfactory efficiency-effectiveness ratio demands careful and anaytical budget building; a systematic and sophisticated cost accounting process; a system of evaluation that permits near-accurate measurement of results in relation to purposes; a systematic means for relating unit costs to results and for determining varying operational ratios of unit-cost to results; and a prescribed method through which feedback of the information will in fact alter the operations continuously in the direction of optimal results with minimal expenditure of resources. During implementation, some responsibilities of this system would be to:

1. Develop new assessment and appraisal techniques
2. Collaborate with ancillary research resources to improve design techniques
3. Design data-gathering instruments for recording input characteristics and output behaviors
4. Develop means for transmitting findings from one component into its own recycling phases and into other components
5. Design systems for the collection and display of longitudinal data
6. Develop program budget
7. Analyze costs of various components per student
8. Measure gains toward program objectives
9. Provide data to assess program effectiveness in terms of costs and student functioning during internship

Chapter 8

OPERATION AND ADMINISTRATION

Introduction

Michigan State University is a large, multi-purpose land-grant college with an on-campus student enrollment exceeding 40,000. The University comprises fifteen colleges, numerous schools and divisions, and more than one hundred administrative departments. In the seven colleges cooperating in the BSTEP effort, there are forty-eight departments, seven schools and twenty-four institutes and centers. The major share of degrees earned by Michigan State University students are granted by these seven colleges. These cooperating colleges have concern and responsibility for the preparation of pre-school and elementary school teachers at Michigan State. In teacher-preparation, our University certifies more teachers than any other institution of higher education in the United States. Administrative decision-making on matters related to teacher-education is vested in an all-university Teacher Education Council whose members are appointed by the President on recommendation of the deans of colleges having some share of program preparation for teachers.

Procedures not unlike those in other large institutions also are established for curriculum study, revision, and improvement. The faculty of each department essentially controls the curricular offerings of its discipline. Every college has its own curriculum committee to review departmental proposals for curriculum change. Recommendations of the college curriculum committee are reviewed and acted upon by the All-University Curriculum Committee which submits recommendations to the University Academic Senate which has final control over curriculum improvement.

Against the backdrop of a complex system of university and faculty control and management of academic programs, new proposals must be cast in planning, organizing, and implementing administrative design and structure. Development of an acceptable and workable management procedure also is complicated by the fact that there are seven colleges intimately involved in BSTEP.

We believe that the organizational-administrative recommendations which follow have good chance of succeeding at Michigan State. In the first place, deans and faculty members of the cooperating colleges have been continously involved since the beginning of the Phase I model development proposal. A BSTEP coordinating committee appointed by the deans has reviewed and approved general organizational plans for the operation of this program. More than 150 faculty members and staff personnel have worked on this and preceding program model plans. Information sessions, both large- and small-group, have been held in order to ensure understanding of the program among the faculty. Representation from public school, state board of education, and professional teacher education groups have helped to formulate operational design. Members of the All-University Teacher Education Council have been apprised of the program. Thus, it is our opinion that the recommended structure for managing this program will work at Michigan State University.

Direction of an educational undertaking as complex as the BSTEP project, in which seven colleges have shared the planning, needs a design of meaningful management structure from at least two broad perspectives:

1. Specification of the operational and oft-times routine management aspects of the project

2. Outline of responsibilities for development, implementation, refinement, and retrial of a newly-conceived instructional program

Operational - Management Aspects

In the case of the first perspective, operational-management responsibility, a defensible rationale exists for placing this program within the two colleges presently responsible to the University for pre-school and elementary school teacher-education programs. Students from BSTEP will be selected from among those whose professional goals are careers in nursery-pre-school or elementary school teaching. The two departments of Family and Child Sciences, and Elementary and Special Education enroll students majoring in these two programs. Freshman students selected for BSTEP during the Spring and Summer of 1970 will be admitted in Fall 1970 as majors in Family and Child Sciences or in Elementary and Special Education. However, these students will follow a BSTEP route rather than the "regular" teacher-preparation programs in these two departments. The University will sponsor a pilot BSTEP preparation program along side the regular pre-school and elementary school teacher education programs.

Family and Child Sciences and Elementary and Special Education departmental staff members will be responsible for BSTEP student advisement and counseling. Advisors for BSTEP students will be given careful orientation to the program; they will be selected for their special interest in the new curriculum. In the advisor role, faculty members will place BSTEP students in special sections, components, and experiences. The student's advisement home will be the department of his major, and advisement folders will be maintained by these departments. This procedure fits the MSU pattern of academic counseling. Faculty members in the two departments have intimate, first-hand knowledge and experience of pre-school and elementary school professional careers. They are the faculties most skilled to provide counsel and academic advisement for students preparing for teaching at these school levels.

Professional teacher-certification programs at these levels also are responsibilities of these departments in cooperation with the College of Education and its School of Teacher Education. This function will continue to be managed in established methods and channels of the University.

Another administrative function to be assigned to the College of Education and the College of Home Economics (See Figure 8:1) is the off-campus laboratory and clinical experiences. Arrangements for these BSTEP activities naturally fall into the domains of the School of Teacher Education in the College of Education and the Department of Family and Child Sciences in the College of Home Economics. These two educational units of the University have developed excellent programs of a laboratory-experience nature, have built an operating network of cooperating districts which include hundreds of Michigan schools and agencies, and are best able to assume this operational function for BSTEP teacher-education. Another reason for placing this administrative responsibility within the purview of these two colleges is the fact that the laboratory-clinical component is an education experience of definite and professional calibre.

A further operational decision of significance, is placement of responsibility for the fiscal management of BSTEP. In any undertaking of this type, it is necessary to pinpoint such responsibility for receipt and disbursement of funds, responsibility to audit agencies, business accounting and bookkeeping, provision of administrative channels of an operational nature, handling of routine administrative matters as initiation and processing of faculty change-of-status forms, and filing and maintaining necessary records. Fiscal responsibility for general administrative-operational matters will be placed in the Office of the School of Teacher Education.

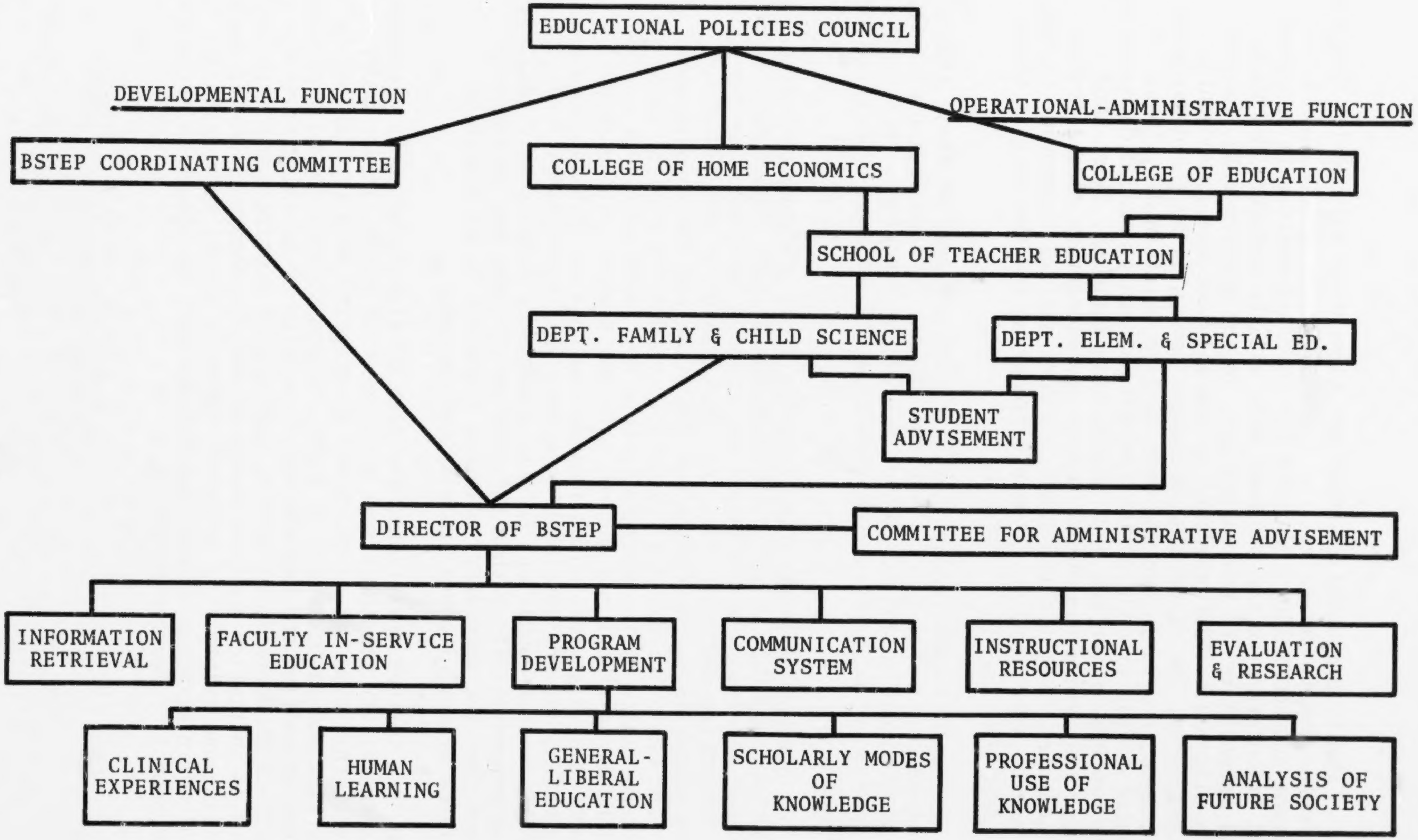

EDUCATIONAL POLICIES COUNCIL
DEVELOPMENTAL FUNCTION
OPERATIONAL-ADMINISTRATIVE FUNCTION
BSTEP COORDINATING COMMITTEE
COLLEGE OF HOME ECONOMICS
COLLEGE OF EDUCATION
SCHOOL OF TEACHER EDUCATION
DEPT. FAMILY & CHILD SCIENCE
DEPT. ELEM. & SPECIAL ED.
STUDENT ADVISEMENT
DIRECTOR OF BSTEP
COMMITTEE FOR ADMINISTRATIVE ADVISEMENT
INFORMATION RETRIEVAL
FACULTY IN-SERVICE EDUCATION
PROGRAM DEVELOPMENT
COMMUNICATION SYSTEM
INSTRUCTIONAL RESOURCES
EVALUATION & RESEARCH
CLINICAL EXPERIENCES
HUMAN LEARNING
GENERAL-LIBERAL EDUCATION
SCHOLARLY MODES OF KNOWLEDGE
PROFESSIONAL USE OF KNOWLEDGE
ANALYSIS OF FUTURE SOCIETY

Figure 8:1 Administrative Organization Design

General Developmental-Instructional Program Aspects

The second broad area for which operational responsibility is specified is the developmental-instructional program aspect. The course-content instructional program for BSTEP is based on a series of related curricular modules of a performance-based nature. Support for the whole program ties in a strong foundational structure of behavioral science. These factors and others vary greatly in content and procedure from the regular programs which pre-school and elementary school teacher candidates take. These differences are described carefully in the BSTEP Final Report of Phase I and in other sections of this Phase II document. Faculty in all BSTEP components will assume these general responsibilities:

1. Agreement on general and specific goals and objectives for the students' academic experiences

2. Review and refinement of curricular experiences already developed

3. Organization of modules into a meaningful set of experiences

4. Organization of instructional procedures including resources and clinical experiences

5. Analysis of content against the criteria of behavioral science objectives

6. Teaching or trying-out components

7. Evaluation of experiences with colleagues and with students

8. Refinement and revision of experiences in light of evaluation

9. Re-teaching

These nine steps will normally be followed in design of every instructional component of BSTEP though some variation may be necessary in unusual aspects.

The developmental-instructional job is by far the most signicant responsibility of university staff members as they undertake this new and different approach in teacher education in cooperation with other educational agencies.

Therefore, in an effective and operational design for BSTEP, major responsibility for success or failure lies in structure.

Success of the BSTEP Program will depend on ability to plan, develop and implement a successful instructional program, and not on which individuals or agencies handle fiscal matters, advise students, or arrange for clinical experiences.

Educational Policies Council

Developmental-instructional responsibility for BSTEP will be supervised by the Educational Policies Council which includes the dean of each of the seven cooperating colleges.

Dr. John E. Ivey, Jr., Chairman	Dean, College of Education
Dr. C. Leland Winder	Dean, College of Social Science
Dr. Richard U. Byerrum	Dean, College of Natural Science
Dr. Jack M. Bain	Dean, College of Communication Arts
Dr. Edward A. Carlin	Dean, University College
Dr. Paul A. Varg	Dean, College of Arts and Letters
Dr. Jeannette A. Lee	Dean, College of Home Economics

BSTEP Coordinating Committee

This committee is composed of representatives of the seven cooperating colleges, with members appointed by the deans of the respective colleges. This faculty committee will maintain close liaison with the Director of BSTEP: in fact, he will report directly to this committee on matters concerned with curriculum development and instruction. The coordinating committee is an administrative committee for the Educational Policies Council. It will report directly to the council on matters directly concerned with programs, instruction, and developmental and implementation phases of the curriculum. In addition, committee members from the Colleges of Education and Home Economics will provide to the committee pertinent and relevant operational-administrative information on problems or matters.

Prof. Noah Alonso	Department of Art
Dr. Jay W. Artis	Department of Sociology
Dr. Beatrice Paolucci	Department of Family and Child Sciences
Dr. Vera Borosage	Department of Family and Child Sciences
Dr. Arthur M. Vener	Department of Social Science University College

Dr. Marvin L. Tomber	Department of Mathematics
Prof. William B. Hawley	Associate Dean, Teacher Education, College of Education
Dr. Margaret Jacobson	Chairman, Department of Family and Child Sciences
Dr. Wm. V. Hicks, Chairman	Chairman, Department of Elementary and Special Education
Dr. Leland W. Dean	Associate Dean, College of Education

Advisory Committee for Administrative Operation

There will be established a committee to review administrative and operational procedures and practices for the two colleges charged with these responsibilities. This committee will have representation from students, faculty, cooperating schools and agencies, university, and government agencies:

	Members
Pre-school and Elementary School BSTEP Students	3
Departmental Family and Child Sciences, and Elementary and Special Education Faculty	2
Public School and Pre-school Institutions	2
Professional Teacher Organizations	2
State Department of Education	2
University Office of Urban Affairs	1
Director, BSTEP, (Ex-officio), Chairman	1

This committee will constitute a liaison and advisory group for the Director of BSTEP and for the Colleges of Home Economics and Education in:

1. Selection of clinical and laboratory facilities in off-campus settings
2. Placement and supervision of students in clinical programs
3. Relationship between clinical agencies and the University
4. Recommendations concerning selection of BSTEP administrative personnel
5. Review of student-selection and admission policies, and implementation of those policies
6. Review of student-advisement policies
7. Fiscal administration

Summary Of Administrative Operation

The Educational Policies Council will have final responsibility decision on matters concerned with BSTEP operation.

The relationship between fiscal management-operational details and overall administrative-supervisory responsibility is simplified by the fact that both deans of the Colleges of Education and Home Economics serve on the seven-member Educational Policies Council. Under this administrative design, the Council depends on its appointed committee (BSTEP Coordinating Committee) to study and to review problems of a developmental and curricular nature, to make recommendations, to review any policies related to this program, and to make suggestions and recommendations to the deans' Council. The BSTEP Coordination Committee, thus, can initiate studies concerned with the program; it is a study committee and a recommending committee for the cooperating colleges. It can be a decision-making body if so directed by the Educational Policies Council.

Direct relationship of this committee to the operational-administrative responsibility in the College of Home Economics and the College of Education is achieved by inclusion in its membership of two associate deans in the College of Education, the chairmen of the Departments of Family and Child Sciences, and of Elementary and Special Education, and two other faculty representatives from the College of Home Economics. Another important factor in this administrative structure is that the All-University Teacher Educational Council, a committee responsible for all teacher-educational endeavors for the University, is represented by four members on the 11-member BSTEP Coordinating Committee.

Even though the operational-administrative function for fiscal accounting, student advisement and accounting, student clinical placement and supervision, teacher certification, is separated from curriculum developmental function, the program structure clearly provides responsibility for final decision-making and deliberation-study-recommending agencies with cross-membership ties to aid in effective communication and project operation.

Following the figure on organizational structure, a PERT chart graphically illustrates some administratively related matters such as initial departmental contact, committee approval relationships, and facilities organization.

ADMINISTRATION-RELATED MATTERS

Involvement of Public Schools and Pre-School Institutions in the Operation of BSTEP

Assumptions

1. Regular teacher-education programs will be continued during the BSTEP pilot project.

2. A limited number of Clinic-School Centers, probably three, will be established as clinical bases for BSTEP operations.

3. In the pilot Clinic-School Centers some modification of the regular Elementary Intern Program may be necessary.

4. BSTEP operations in the centers will vary slightly depending upon the diversity of the cooperating agencies.

5. Cooperating agencies need to be represented on the BSTEP Committee for Administrative Advisement.

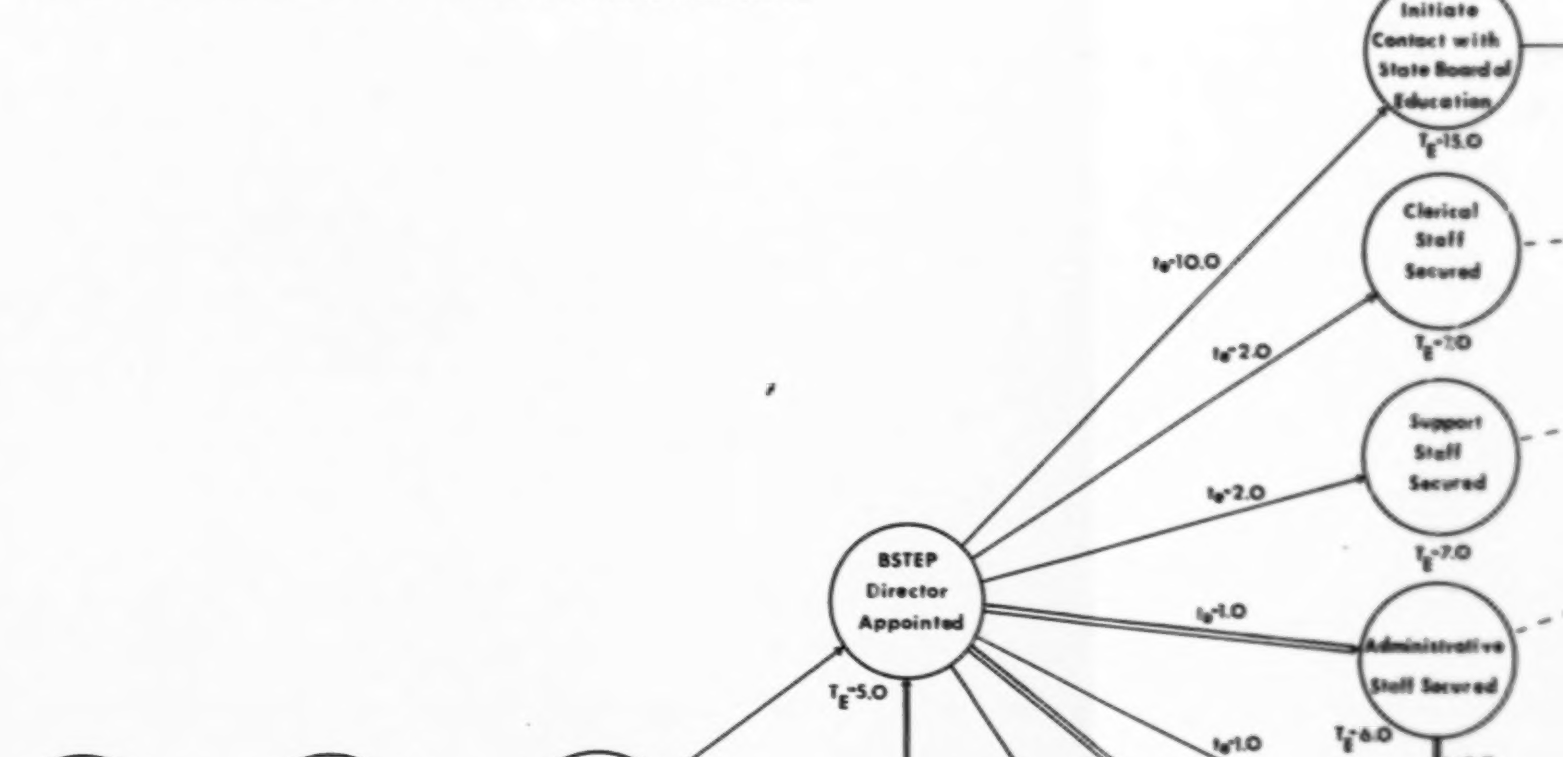
General Recommendations

Each Clinic-School Center will have a Committee for Administrative Advisement. Each Clinic-School Center Committee will select one of its members to represent it on the BSTEP Committee for Administrative Advisement. Assuming the establishment of three Clinic-School centers, a three-member sub-committee will represent the cooperating agencies on the BSTEP Committee for Administrative Advisement. This sub-committee will be called the Cooperating Agencies Sub-Committee.

PERT Chart 8:1 Operation and Administration

(Page 308)

BSTEP - IMPLEMENTATION PHASE - ADMINISTRATION


Initial Model Development Completed (Oct.31,1968)
Feasibility Study Completed (Dec.31,1969)
Commitment Of Education Policies Council For BSTEP Implementation
BSTEP Director Appointed
$T_E=5.0$
BSTEP Advisory Committee Named
$T_E=0$
$t_e=5.0$
Initiate Contact with State Board of Education
$T_E=15.0$
Clerical Staff Secured
$T_E=7.0$
Support Staff Secured
$T_E=7.0$
Administrative Staff Secured
$T_E=6.0$
Initial Implementation Plans Formulated
$T_E=9.0$
Clinic School Network Established
$T_E=25.0$
$t_e=10.0$
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$t_e=2.0$
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$t_e=1.0$
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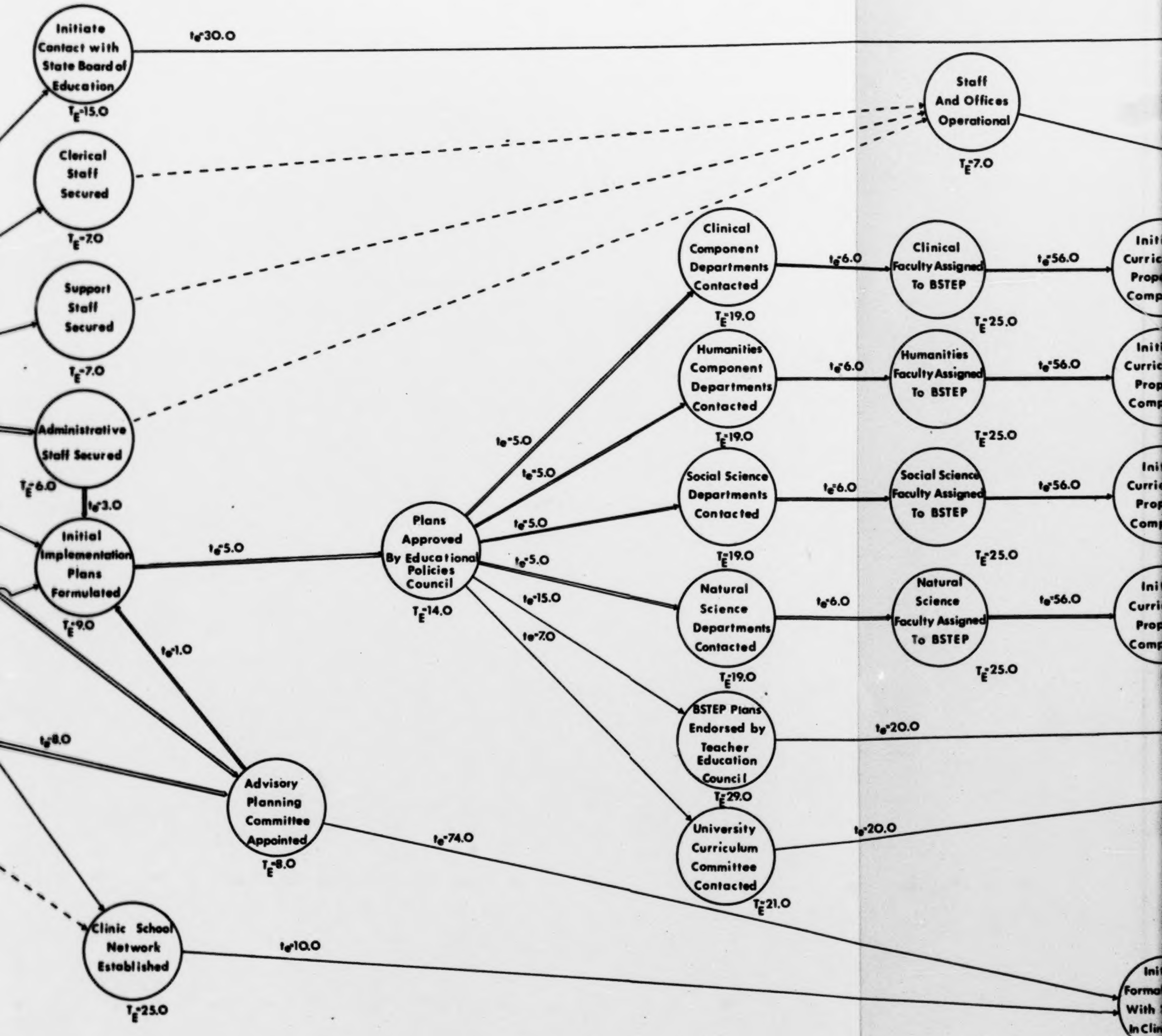
Initiate Contact with State Board of Education
T_E=15.0
t_e=30.0
Clerical Staff Secured
T_E=7.0
Support Staff Secured
T_E=7.0
Administrative Staff Secured
T_E=6.0
t_e=3.0
Initial Implementation Plans Formulated
T_E=9.0
t_e=1.0
t_e=5.0
t_e=8.0
Advisory Planning Committee Appointed
T_E=8.0
t_e=74.0
Clinic School Network Established
T_E=25.0
t_e=10.0
Staff And Offices Operational
T_E=7.0
Plans Approved By Educational Policies Council
T_E=14.0
t_e=5.0
t_e=5.0
t_e=5.0
t_e=5.0
t_e=15.0
t_e=7.0
Clinical Component Departments Contacted
T_E=19.0
t_e=6.0
Clinical Faculty Assigned To BSTEP
T_E=25.0
t_e=56.0
Initi Curric Prop Comp
Humanities Component Departments Contacted
T_E=19.0
t_e=6.0
Humanities Faculty Assigned To BSTEP
T_E=25.0
t_e=56.0
Initi Curric Prop Comp
Social Science Departments Contacted
T_E=19.0
t_e=6.0
Social Science Faculty Assigned To BSTEP
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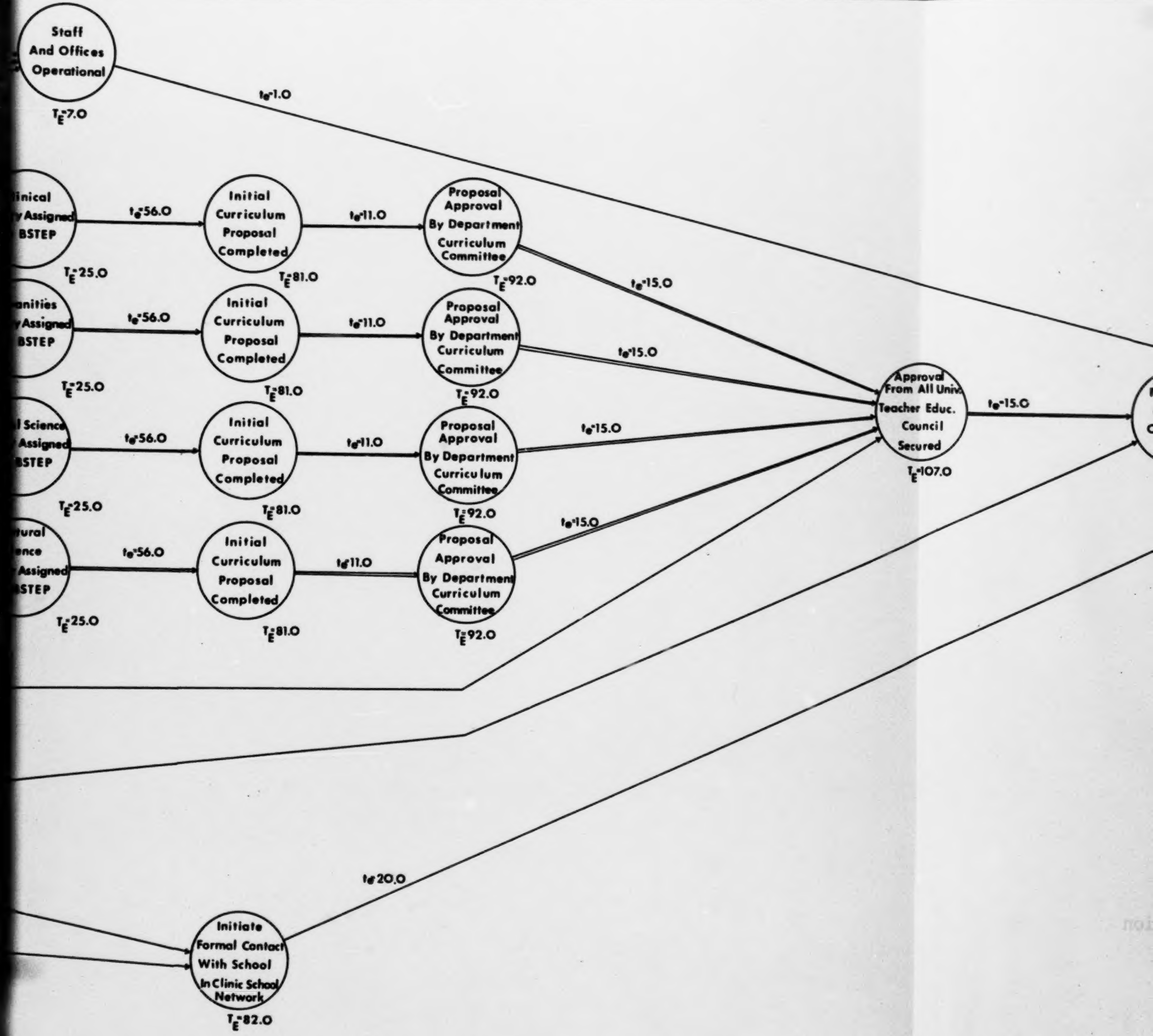
Init Curri Prop Comp
Natural Science Departments Contacted
T_E=19.0
t_e=6.0
Natural Science Faculty Assigned To BSTEP
T_E=25.0
t_e=56.0
Init Curri Prop Comp
BSTEP Plans Endorsed by Teacher Education Council
T_E=29.0
t_e=20.0
University Curriculum Committee Contacted
T_E=21.0
t_e=20.0
Init Forma With In Clin Ne
T


Staff And Offices Operational
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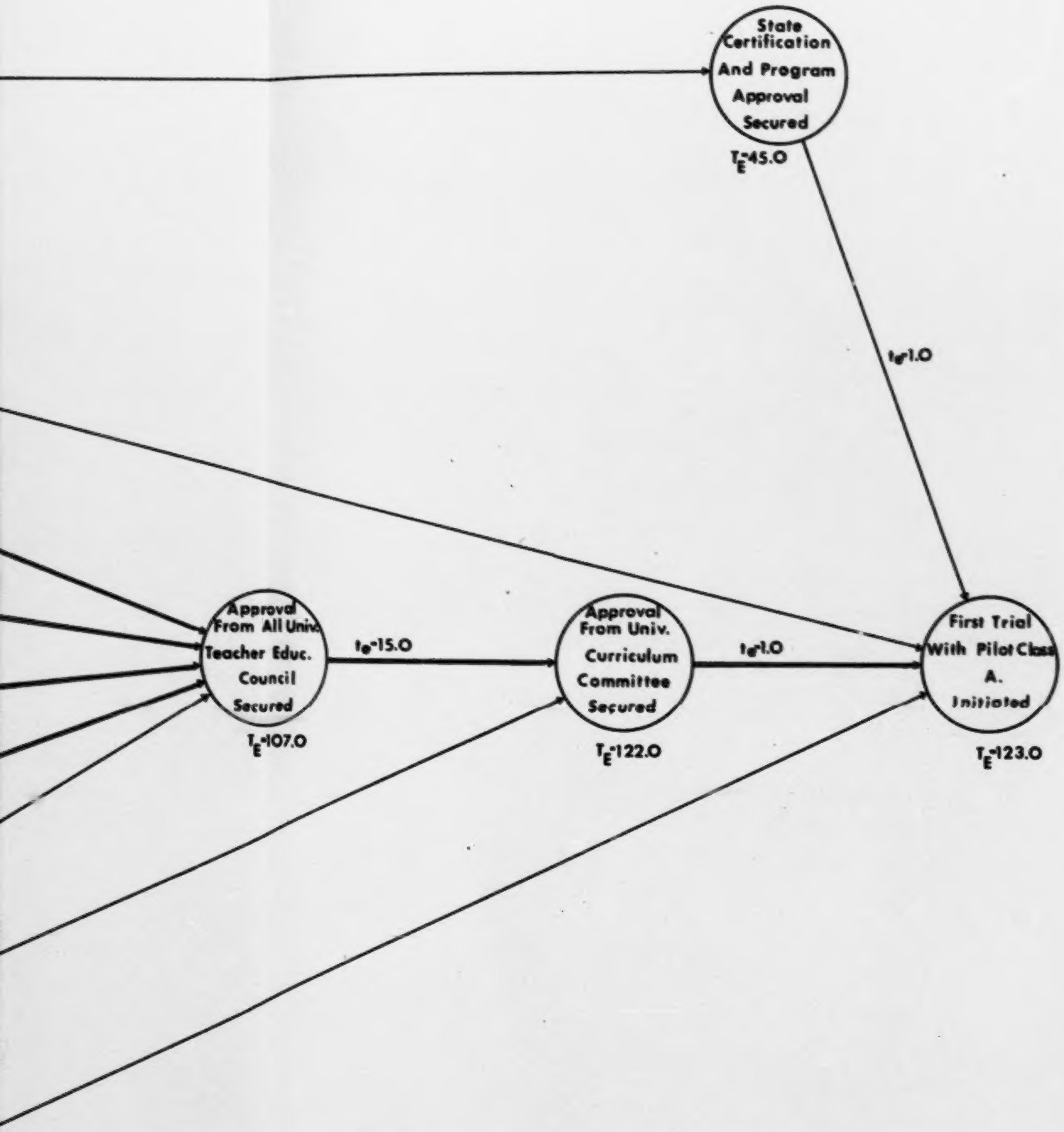
t_e=1.0
linical y Assigned BSTEP
T_E=25.0
t_e=56.0
Initial Curriculum Proposal Completed
T_E=81.0
t_e=11.0
Proposal Approval By Department Curriculum Committee
T_E=92.0
t_e=15.0
anities y Assigned BSTEP
T_E=25.0
t_e=56.0
Initial Curriculum Proposal Completed
T_E=81.0
t_e=11.0
Proposal Approval By Department Curriculum Committee
T_E=92.0
t_e=15.0
l Science y Assigned BSTEP
T_E=25.0
t_e=56.0
Initial Curriculum Proposal Completed
T_E=81.0
t_e=11.0
Proposal Approval By Department Curriculum Committee
T_E=92.0
t_e=15.0
tural ence y Assigned BSTEP
T_E=25.0
t_e=56.0
Initial Curriculum Proposal Completed
T_E=81.0
t_e=11.0
Proposal Approval By Department Curriculum Committee
T_E=92.0
t_e=15.0
Approval From All Univ. Teacher Educ. Council Secured
T_E=107.0
t_e=15.0
t_e=20.0
Initiate Formal Contact With School In Clinic School Network
T_E=82.0


State Certification And Program Approval Secured
T_E=45.O
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Approval From All Univ. Teacher Educ. Council Secured
T_E=107.O
t_e=15.O
Approval From Univ. Curriculum Committee Secured
T_E=122.O
t_e=1.O
First Trial With Pilot Class A. Initiated
T_E=123.O

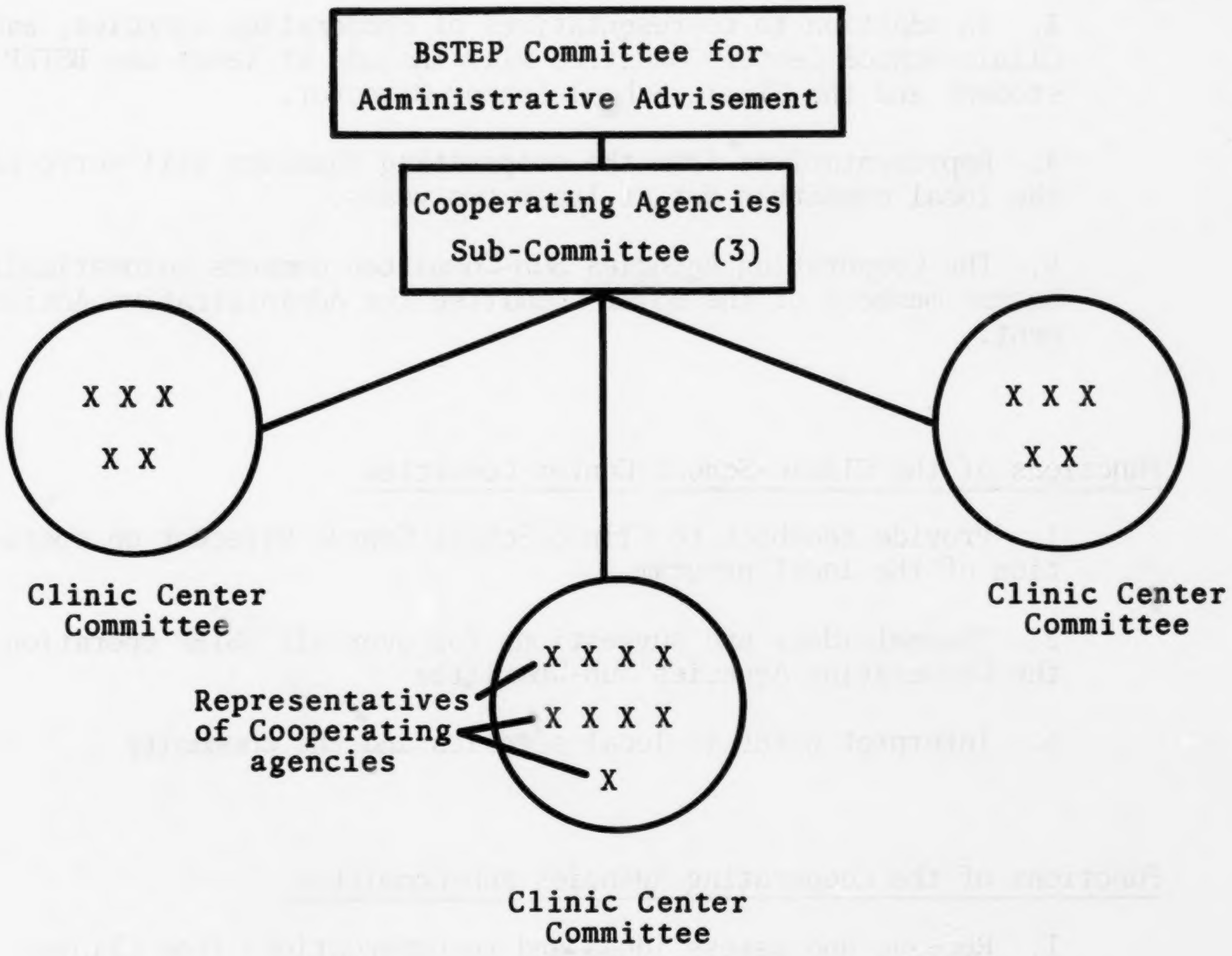
BSTEP Committee for
Administrative Advisement
Cooperating Agencies
Sub-Committee (3)
X X X
X X
Clinic Center
Committee
X X X
X X
Clinic Center
Committee
X X X X
X X X X
X
Representatives
of Cooperating
agencies
Clinic Center
Committee

Figure 8:2 Clinic-School Center Organization

Specific Recommendations

1. Each cooperating agency will be invited to select one representative to serve on the local Clinic Center Committee.

2. Each Clinic-School Center Committee will elect its own chairman and single representative to the Cooperating Agencies Sub-Committee.

3. In addition to representatives of cooperating agencies, each Clinic-School Center Committee will include at least one BSTEP student and the Clinic-School Center Director.

4. Representatives from the cooperating agencies will serve on the local committee for at least two years.

5. The Cooperating Agencies Sub-Committee members automatically become members of the BSTEP Committee for Administrative Advisement.

Functions of the Clinic-School Center Committee

1. Provide feedback to Clinic-School Center Director on operation of the local program

2. Channel ideas and suggestions for over-all BSTEP operation to the Cooperating Agencies Sub-Committee

3. Interpret BSTEP to local agencies and the community

Functions of the Cooperating Agencies Sub-Committee

1. Receive and assess ideas and recommendations from Clinic-School Center Committees

2. Represent the local centers on the BSTEP Committee for Administrative Advisement

3. Provide feedback to local Clinic-School Center Committees from the BSTEP Committee for Administrative Advisement

Staff Involvement and Implementation Procedures

Staff Involvement

Since staff members will be drawn from several departments and colleges in development and implementation activities, such as teaching on part-time or full-time bases during academic quarters or years, the major relationship must be maintained in the faculty members' home departments. A staff member's assignments, and use of his time, should be determined in collaboration with his department chairman. The department chairman will maintain communication with the

BSTEP Director so that common goals can be established and achieved. To the degree that the department members' time is given to BSTEP, that portion of his salary will be reimbursed to the department so that those monies can be used for his temporary replacement in the department. While it is important that the faculty member maintain a continuing relationship within his own department, for example in the areas that pertain to his tenure, promotions, salary, and sabbatical leaves, during the period of his appointment, his primary responsibilities are to BSTEP.

BSTEP faculty members will be expected to attend meetings called by the BSTEP Director and to work on special assignments, committees or other activities as deemed appropriate by the BSTEP Director. Each BSTEP faculty member will be responsible for keeping his departmental chairman apprised of his activities.

Procedures and Steps for Implementation

The following sequential steps seem appropriate to effectively implement this program:

Advisory Planning Committee. A joint advisory committee on planning, should be appointed early in the preimplementation period. This Advisory Planning Committee should be comprised of the following personnel:

1. Students who are currently in the Departments of Family and Child Sciences and Elementary Education

2. Representatives from professional teacher organizations

3. Representatives from urban school districts and other non-university agencies such as directors of day-care centers or nursery schools

4. The BSTEP Director and perhaps several members of the Administrative Advisory Committee

Departmental Involvement. This initial planning will directly involve College departmental members. When the Advisory Planning Committee has made decisions on courses to be taught, the Committee will contact the department directly affected and each department will work through its own College Curriculum Committee immediately. The appropriate sequential steps in getting a change in curriculum implemented are as follows:

1. The department establishes the guidelines and specifics relative to the curriculum change in BSTEP.

2. The department approves or disapproves the curriculum change. If it is approved, it then goes to the College Curriculum Committee. From the College Curriculum Committee, any program that affects teacher-education goes to the University Teacher Education Council. From there it goes directly to the University Curriculum Committee.

If this program is to be effectively implemented, the same sequential steps should be followed in each department as appropriate. Hence, the department members who will be directly involved, and those departments most directly involved, should begin work early in the pre-implementation period.

The Advisory Planning Committee will prepare specific curricular guidelines to distribute to appropriate departments. Those departments participating in components to be initially implemented will begin refining the BSTEP curriculum as soon as possible in the pre-implementation months so that the program can be acted on by College and University Committees and by the University Teacher-Education Council.

Grading, University Student Records

With the initiation of a new teacher-education program involving performance criteria, a modular curriculum grouped by components rather than a course structure, the extension of clinical experiences throughout the student's college program, and involvement of many persons and organizations both within and outside the University, the procedures for grading, assignment of academic credit, and treatment of transfer credit must be given special consideration and exploration on an experimental basis as workable practices evolve.

The following are recommendations which will need to be considered as this program is implemented:

1. Grading

Grading is recommended that the present University system of "Credit - No credit" be extended to the BSTEP program.

2. Shall students who complete the modules before the end of the term have "finished" the component requirements, or should they be assigned additional in-depth work to encourage study throughout the term?

Discussion with the Provost's office and University office of Institutional Research focused on this issue. Knowledge of practices and resultant student effort at a number of other universities in the nation provides a recommendation that BSTEP students be held to a uniform set of requirements for completion; and that following completion, students be offered an opportunity to continue immediately on to the next component rather than to pursue in-depth modules. Therefore, it is recommended that BSTEP students pursue uniform component modules at individual rates and that, following completion of stated objectives, they be permitted to add the next component any time during the term.

3. What procedures would be followed for recording grades for BSTEP students who complete the component modules prior to the end of the term?

The Assistant Registrar states that procedures require that professors assign grades at the end of each term when grade cards are issued by Registrar.

It is recommended that professors hold the grades for recording until the end of the term for students who complete the modules prior to the end of the term.

4. How may BSTEP students utilize their time most efficiently to accelerate their programs if they complete the component modules prior to the end of the term?

Present University policy could enhance the proposed BSTEP plan for independent study and completion of modules at varying speeds. Students completing modules prior to the end of the term may add another component or more at any time during the same term, through regular channels during the first five weeks of the term, or with a dean's permission during the last five weeks of the term.

5. What shall the grading procedures for those students who are unable to complete the component modules within the term be registered?

Students who are unable to complete the component modules within the regular term will be assigned an Incomplete (I), thereby gaining an additional term for component modules completion.

6. How will the Registrar process student records for students who transfer to another department or to another institution?

Procedures for facilitating transfer already exist within the University structure, as student grades are reported in numerical terms for all students (including those in the Credit/No credit courses) and the numerical grade is recorded in the permanent record for this purpose.

BSTEP students will have recorded in their permanent records the earned numerical grade at the same time they receive the grade of "credit." If, at a later time, students transfer to another department or another institution, the numerical grade may be transferred.

Maintaining an Effective Communication System

To function effectively, and with adaptability to changing needs, the BSTEP program needs a two-way free-flow communication system linking all segments of the program on and off campus.

Such a system should be headed by a communication coordinator, responsible to the BSTEP Project Director, and should use such tools as mass media, conferences, newsletters, seminars, group discussions, orientation meetings, and questionnaires. Inter-and intra-department networks are necessary links, as are formal and informal communications.

Outgoing communications should provide information to all segments on BSTEP policy goals and specific objectives, on academic and operational needs and designs, on procedures relative to components, enrollment, counseling, schedules, meetings, etc. Incoming communications would be chiefly evaluations and feedback on reactions, performance in relation to goals and objectives, and response to program action.

The Communication Coordinator should keep all channels open at all times, in the hierarchical flow-lines up and down, and also between the organizational units that function on matching levels. Such all-channels communication can eliminate gaps, overlapping, and inefficiency, and spotlight needs for revision in procedures. The free flow of information and feedback is particularly important in BSTEP because it is a new program without traditions or established procedures, but a program in which all segments must be kept alert to internal and external action. In addition, BSTEP functions in a modern complex society, marked in the late 1960s and perhaps later by considerable student unrest and demands in many parts of the nation and abroad; hence two-way communication is a necessity.

The all-channels communication system should link:

On campus

1. Project Director

2. Departmental officials and assigned faculty in each of the university colleges involved in BSTEP curriculum or the comparable units of the implementing university. At MSU, involved colleges are those of Arts and Letters, Communication Arts, Education, Home Economics, Natural Science, Social Science, and University College.

3. Department officials and assigned faculty in each of the BSTEP operational and supportive subsystems of Planning Development, Clinical Experience, Manpower Planning, Information Retrieval and Evaluation.

4. Teacher-trainees

Off-campus, including Clinic-School Network

1. United States Office of Education

2. State Department of Education

3. Other Universities

4. Other Public, Private, Elementary and Pre-School Institutions

5. Public

6. Clinic-School Network

    School Districts
    Elementary Schools
    Parents
    Non-Faculty
    EIP Staff

7. Teacher-trainees, interns

Tied to the behavioral science focus of BSTEP is provision for evaluation and feedback on curriculum and operation. The feedback can be both formal and informal, positive and negative; it must be gathered, analyzed, reacted to and disseminated to related segments of BSTEP as bases for any revisions made in the Program. An example of this kind of feedback is the provision in each prepared module for evaluation of the experience, with periodic reports to be made by and to the related BSTEP divisions. Such feedback in and between departments can eliminate any one-way authoritarian control which constricts horizontal action and discourages affirmative participation. Similarly, student-faculty information and feedback is provided in the Interpersonnal Process Recall (described in the BSTEP Final Report, Volume 1) which elicits reaction to simulated experience for the purpose of improving the professional skills and sensitivity of the student teacher.

Communication among BSTEP students on campus can be facilitated through physical proximity. A well-integrated group of students, involved and motivated, can be developed in a particular dormitory or living-learning unit being assigned. Graduate advisors in the dormitory can provide information and gather feedback in a context that is not generally available to department faculty advisors, counselors and consultants. Periodic meetings, formal and informal social gatherings, bulletin boards for joint BSTEP and students use, are suggested.

BSTEP students off campus must be kept in touch with each other and with on-campus students, faculties and departments. Structured measurements of their behavioral attitudes and achievements also are essential in the formal feedback.

Some of the communication tools available to the Project Director, Communication Coordinator and other BSTEP participants are: discussion groups, lectures, debates; on-and off-campus conferences of large and small groups, held regularly or ad hoc; telephone conferences, formal and informal social functions; questionnaires to students at various stages of their four-year teacher-education program; two regular high-content newsletters with comprehensive mailing lists, one as an official BSTEP publication, and the other a student-operated newsletter for trainees on and off campus; inter- and intra-department reports and memos using standard forms and channels for quick dispatch and easy reference; orientation programs and promotional films for interested educational institutions and practicing teachers; active contacts with leaders and spokesmen for teacher organizations; and news releases for public communication via mass media.

Before the BSTEP program begins, a conference should be held for all staff members, including teaching faculty, to develop positive attitudes and skills for operating in the all-channel communications system.

The chart on the next page may help visualize the major audience segments discussed in the communication plan. As shown in the chart, the communication coordinator has responsibility for facilitating the flow of messages among persons in the following audiences:

1. Persons concerned with curriculum development and implementation

2. Teacher trainees

3. Persons in operational and supportive aspects of the training program

4. Persons in various off-campus groups sharing development and operation

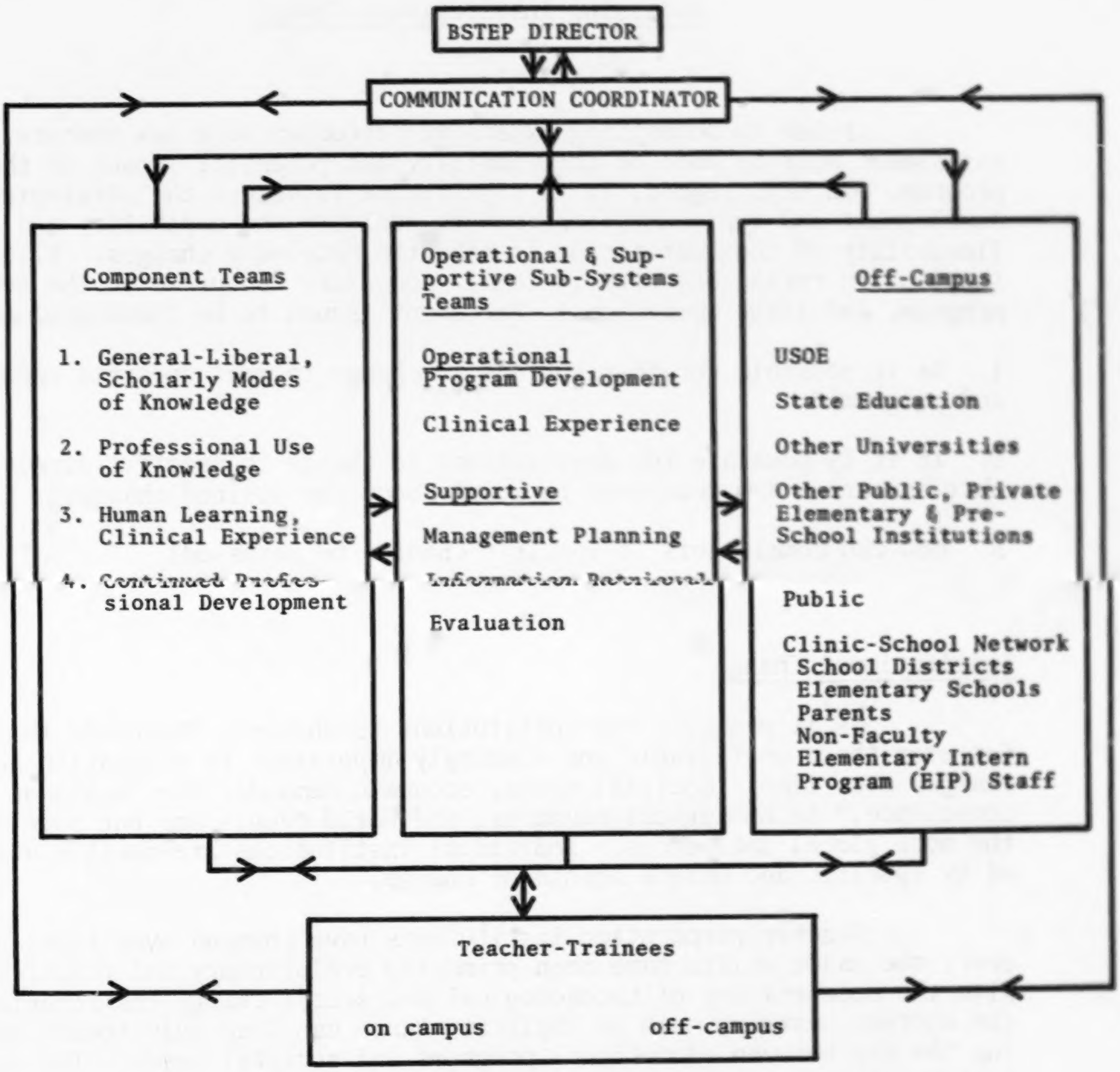
BSTEP DIRECTOR
COMMUNICATION COORDINATOR
Component Teams
1. General-Liberal, Scholarly Modes of Knowledge
2. Professional Use of Knowledge
3. Human Learning, Clinical Experience
4. Continued Professional Development
Operational & Supportive Sub-Systems Teams
Operational
Program Development
Clinical Experience
Supportive
Management Planning
Information Retrieval
Evaluation
Off-Campus
USOE
State Education
Other Universities
Other Public, Private Elementary & Pre-School Institutions
Public
Clinic-School Network
School Districts
Elementary Schools
Parents
Non-Faculty
Elementary Intern Program (EIP) Staff
Teacher-Trainees
on campus
off-campus

Figure 8:3 Communication System

Assessing Institutional Change

Prior to committing extensive resources to a new venture, some assessment must be made of the viability and potential impact of the program. In this regard, it is significant to assess the strategies of development and implementation, and to evaluate the capability and flexibility of the institution to make the necessary changes. Will the institution revise objectives, commit necessary resources to the new program, and alter operations? Pertinent issues to be considered are:

1. Is it possible for institutions to change to meet specific needs and programs?

2. If it is possible for institutions to change in specific directions, what resources are necessary to bring about the desired changes?

3. How can commitments to specific changes be assessed?

Institutional Change

Is it possible for institutions to change? Obviously they can, for even those most stable and seemingly impervious to alteration have changed over time. Societal needs, economic demands, the "national conscience," technological advances, and world events are but some of the more global influences. Individual institutions are further affected by specific and unique agents of change.

Teacher preparation institutions have changed over time; however, the major shifts have been primarily evolutionary and reactive. With the acceleration of technological and social change characterizing the current century, such an implicit stance can lead only toward widening the gap between educational programs and societal needs. The important question is not can educational institutions change, but will they change rapidly enough to meet the needs of a changing society? The strategies employed in several major educational innovations may illuminate the *modus operandi* which could accelerate needed reforms in teacher preparation.

In many areas improvement has resulted from the efforts of pioneers who conceived of innovations, developed them, and distributed them widely after prototype testing. In education, new organizational patterns, technological and differentiated staffing patterns are examples of experimental efforts conducted in individual schools which had desirable connotations for other institutions, and were widely adopted. Curricular reforms of the last decade are primarily the result of small task-oriented groups who developed materials, prototype tested them in selected schools, revised them, and then distributed them widely.

In each of these illustrations, the impetus for change occurred with a committed small group, and after initial development the innovation was disseminated to other schools and educational agencies. For these pace-setting institutions, the trauma of change was probably greater (though likely offset by pride and commitment) than with those who later implemented the innovation. The new venture likely strained resources, changed the focus of other efforts, and survived unforeseen needs and problems. After the initial development, however, demands of the program could be more readily predicted, and materials made available for implementation. Thus the polished program could be readily transported to other institutions that would profit both from the inventive spirit of the innovator and the more explicit specifications for implementation.

Because of their pivotal position, then, the focus on institutional change should be upon the specific change agents which initiate the efforts.

Requisites of Institutional Change

Three areas must be considered in assessing potential for focused institutional change:

1. Commitment to innovation
2. Necessary human and material resources
3. Plan of action

Commitment includes goal setting, priorities, and willingness to solve problems arising because of the innovation. While difficult to define, commitment per se is a necessary, though not sufficient condition for producing new programs. Institutional change involves not only desire, but allocation of needed resources--physical, human, and fiscal. Broad support of a wide range of personnel talents and facilities is a requisite in developing the necessary conceptual framework, materials, and procedures. Further, the interaction of institutional resources must be focused on the new venture through detailed advance planning. Comparison of plans with actual achievements during the developmental period provides yet another assessment of the extent of institutional change.

Assessment of Institutional Change

Educational institutions can make significant and directional changes when they are committed to alteration in curricula and when the necessary resources are allocated. The important question, however, is "How can institutional commitment to, and necessary resources for, a new program be assessed?" Since commitment can be attained through both formal and informal channels, indices of both are necessary for assessing change potential.

Nominal commitment is readily obtained. Typically, institutional officials write letters of support commending an experimental program, particularly when no specific definition of personal contribution is required. This is especially true when the program involves funding by government or philanthropic foundations.

Genuine commitment cannot be measured directly. However, indices of commitment can be applied to assess the significance of a new venture for an institution. Further, the extent and allocation of resources, and the specificity and feasibility of plans can be assessed in probing potential for institutional change. Questions can be designed to assess genuine commitment, resource allocation, and planning effectiveness of institutions for making significant improvements in projected programs.

The conceptual design discussed above can be employed to ascertain the potential of teacher education institutions to make the necessary changes proposed in this and other of the teacher education models. In the USOE Elementary Teacher Education Project, indicators of potential change may be classified by the developmental periods in the series of developmental activities. These are:

1. Model building and feasibility studies (March, 1968-December, 1969)
2. Developmental period (January, 1970-August, 1976)
3. Post-Developmental period (September, 1976-)

The first period has been completed, thus institutional commitment to model building and feasibility studies can be assessed. Since the developmental and post-developmental periods have not occurred, plans for them become significant. Important, too, are the potential resources to be allocated to these phases, as well as the past performance of the institution in other similar ventures.

During each developmental period, three major sectors of the educational community can be identified as contributors to model development. These are:

a. College of Education

b. University

c. Other education agencies

The interaction of these two aspects--time and education sectors--have been utilized in classifying indices of potential for institutional change. The questions which follow provide a beginning for establishing the criteria of institutional change. While each, in itself, may seem unimportant, the sum adds to a picture of the relative commitment, resources, and plans of an institution to a teacher education venture.

Model Building and Feasibility Studies

Within the College of Education

1. How many members of the elementary education faculty contributed to model building and feasibility studies?

2. What proportion of the departmental staff is this?

3. How many other members of the College of Education staff contributed to the project?

4. What proportion of the College of Education faculty is this?

5. What was the academic rank of major contributors?

6. What was the extent and nature of each of their contributions?

7. What was the experience, background, and major competencies of these contributors?

8. To what extent and in what ways have the departmental and college curriculum committees been involved?

9. What orientation procedures were used with both contributors and other faculty regarding the program?

10. What innovative programs have been developed by the elementary education faculty during this past decade?

11. What innovative programs of direct relevancy have been developed by major contributors to this program?

Within the University

1. How many non-education faculty were involved in developing the model?

2. What was the academic rank of major contributors?

3. What was the experience and background of these contributors?

4. What was the nature and extent of each of their contributions?

5. To what extent are administrative officers and faculty in other colleges within the university knowledgeable about and supportive of the new program?

6. To what extent have university curriculum committees been involved in planning?

7. How was the program organized to utilize the talents and contributions of non-education faculty?

8. What procedures have been outlined for obtaining needed formal commitments?

9. How were specialized university facilities (Media Center, Provost's Office, Computer Center) used in model building?

10. What innovation programs of direct relevancy have been developed by major non-education contributors to this program?

With Other Educational Agencies

1. How many people from other educational agencies were involved in model development?

2. What was the extent and nature of each of their contributions?

3. What was the experience, major competency, and current assignment of these non-university contributors?

4. Describe the nature and extensiveness of university-school relations during the past five years. How closely aligned are these relations? To what extent have mutual financial resources been involved?

5. In what ways have representatives from the profession been involved in model building or feasibility?

Developmental Period

Within the College of Education

1. Who are the students available to test the viability of the program, using both experimental and control groups?

2. How many students would be involved initially in the program? Eventually, how would non-model program students be involved?

3. What plan has been formulated to attract, identify, and test students in the experimental group?

4. By what means and to what extent have faculty tested parts of the experimental curriculum?

5. What faculty resources would be committed to the new program?

6. What are their backgrounds, academic ranks, and competencies?

7. What plans have been made for faculty in-service activities?

8. What provisions have been made for space, equipment, computer facilities, and media support facilities for developmental activities?

9. What is the level of priority of this program within the College of Education?

10. What plans are projected for continual evaluation?

Within the University

1. What indices of interest and commitment by non-education faculty to the program are there? How many have agreed to work on the project? What are their competencies?

2. Are deans of non-education faculty willing to commit faculty to this program? Describe nature and extent of this support and rank and number of faculty being considered.

3. Describe the procedure whereby non-education faculty can work on the project and receive recognition in their home departments?

4. To what extent is the University Provost or Academic Vice-President knowledgeable and supportable of the program?

5. To what extent is the Registrar's Office flexible enough and willing to change to meet the demands of the new program?

6. To what extent are university media resources, computer facilities, information retrieval programs, evaluation services, and other resources adequate and available to meet the demands of the new program?

7. What is the plan for completing initial development and try-out of various curriculum areas?

8. What is the plan for assessing the extent to which progress during development is consistent with plans?

9. How can the level of priority of this program in the total university be assessed?

10. How is the program organized and managed to insure adequate employment of university personnel and material resources?

With Other Educational Agencies

1. What plan has been formulated to involve other educational agencies in the program's development?

2. What is the nature and extent of projected involvement by elementary school personnel?

3. In what ways will children and schools be utilized in development? What organizational plan is projected for securing such contributions?

4. Have boards of education of related school systems approved participation in the program?

5. Has the State Department of Education approved the program for certification purposes?

6. In what ways are non-school agencies effectively involved in development?

Although much more elusive, the importance of further development following the five-year initial development period cannot be underestimated. Indices of this level of continued commitment may be drawn from the institution's past performance, nominal support by present officials, plan for increased support during development, and related factors previously identified.

Post-Development Period

Within the College of Education

1. What is the stated commitment of the college to continue the program following the five-year development period?

2. To what degree has the college continued similar programs after outside funding has terminated?

3. What plans are projected for continuing to improve the program following funding?

4. In what ways is the program likely to change current staffing and organizational patterns?

Within the University

1. What elements of the program design ensure continuation and expansion following development?

2. What evidence is there that university officials are nominally committed to post-development support of the program?

3. What plan is there for significantly and continually involving university officials and non-education college deans and faculty in the development period so as to assure their continued support following that period?

4. What is the potential of the program for implementation in other educational institutions?

With Other Educational Agencies

1. What facilities and arrangements assure post-development period participation by other educational agencies?

2. What is the extent of nominal commitment to continued program improvement following the five-year developmental period?

3. What plan has been formulated to significantly involve personnel from other educational agencies during the developmental period so as to assure their continued interest following that period?

4. What is the potential of the program to make important changes in elementary school instruction?

Chapter 9

SELECTION AND RETENTION OF STUDENTS

A vital task in launching BSTEP is identification of the student population to be served. General factors to be considered are:

1. Societal need for skilled teachers willing to work in different teaching situations
    a. Rural
    b. Urban
    c. Small Town
    d. High Socio-economic level
    e. Medium socio-economic level
    f. Low socio-economic level
2. Availability of potential students to fulfill teacher needs

Program elements and procedures must promote program completion by promising students. Four areas were examined to identify and develop appropriate selection and retention procedures:

Data available in University Programs relative to Retention and Flow of Students

General procedures for Recruiting BSTEP students

Specific procedures for Screening individual students for BSTEP

Procedures for Selection Retention of Students in BSTEP

University Data Available

For greater utilization of available human and time and material resources, information was sought on recent patterns of student-progress in programs at MSU and similar institutions.

Information was received from James Madison College, a relatively small residential college in operation for two years and specializing in the science of public policy, within the Michgian State University complex. Since James Madison College offers a new program and draws its students from the same population that BSTEP students will come from, it is assumed that the beginning classes will have similar characteristics. The following data were available on the student attrition rate:

Enrollments

	1967-68		1968-69	
Total	222		425	
Male	109	(49%)	226	(53%)
Female	113	(51%)	199	(47%)
In State	168	(76%)	347	(82%)
Out State	54	(24%)	78	(18%)

Withdrawals and Transfers

	1967-68		1968-69	
Total	59	(26.5%)	108	(25.4%)
Male	24	(11%)	40	(9.4%)
Female	35	(16%)	68	(16%)
In State	54	(24%)	95	(22%)
Out State	5	(2%)	13	(3%)

Approximately 75 percent of the students remained at the end of each school year. For the two years represented, the percentages were comparatively stable. Most of the changes in majors resulted from shifts in educational and vocational goals. Many students had entered the program with very hazy ideas of James Madison College's objectives. The probable implication of this for BSTEP is that if the program is fully presented to students prior to selection, attrition rates may be reduced.

An investigation of general patterns in university attendance was made to determine attendance characteristics of students who graduate.[1] Subjects were students who graduated during Summer and Fall, 1964 and during Winter and Spring, 1965.

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[1] Frances H. Delisle, An Investigation of Patterns of College Attendance by means of Transcript Analyses, Office of Institutional Research, Michigan State University, East Lansing, Michigan, 1966.

Several characteristics of MSU graduates were found which may have relevance for recruitment and retention procedures for BSTEP. The study revealed that approximately one-half (48.8 percent) came directly from secondary schools in Michigan. Of transfer students approximately three-fourths (75.7 percent) were from within the state. Almost twice as many transfer students came from junior colleges as from four-year colleges. Students transferred at every level, but most often at the beginning of the junior year. Freshmen and seniors transferred least often from other institutions.

Five patterns of attendance were identified for MSU graduates. Students who were in continuous attendance until graduation were designated as accelerators, regulars, and late graduates. Those students not in continuous attendance until graduation were designated as interrupters and discontinuers. Of those who graduated, 78.3 percent were in continuous attendance and 21.7 percent interrupted their attendance for one or more terms. The regular pattern was the predominant pattern with 54.8 percent of the students. Late graduates comprised 13.1 percent of the sample; they took one or more additional terms to complete the degree. Interrupters represented 17.4 percent of the sample. About one in ten graduates were accelerators (10.4 percent); they completed the degree one or more terms early. The most terms saved by any accelerator was four.

The study also indicated that of an average group of students over a 12-term period about 69.2 percent graduated, and after an average year about 69.1 percent of undergraduates attended at the beginning of the next year.

If these figures can be taken as potentially representative of the BSTEP population, they indicate comparable numbers of students will fall into given categories. Assuming a class of 100 students per year for five years, the following characteristics can be expected:

1. Seventy students will complete the first year and return for fall term of the next year.

2. Of participants in the five-year program, 375 students will receive degrees.

3. Of the 375 students who complete the program

    a. 290 will stay continuously in the program

    b. 85 will interrupt their education for one or more terms but will ultimately obtain degrees

    c. The 290 students who proceed continuously will include

        1) 200 students who progress at the regular pace

2) 50 students who graduate late and take at least one more term than the regular students

3) 40 students who accelerate their program and graduate early

Students in need of tutorial help will be concentrated in the interrupters and late graduate groups. Provision for adequate tutorial assistance may raise the total number who graduate by moving some potential drop-outs to patterns which ultimately graduate.

In BSTEP the number of students who accelerate will probably be greater than in the study cited. The ready availability of program-learning modules will facilitate an accelerated program for the student who wants it.

Graduation totals could be raised by filling class vacancies up to the junior year with transfer students from other MSU departments and elsewhere.

General Procedures For Recruiting Students

Recruitment procedures for the first year of BSTEP will differ somewhat from those of succeeding years because of the relatively short time available for recruitment. Approximately one year will be available for contacting students, giving information on BSTEP, selecting and screening the first class.

Recruitment efforts will be concentrated on in-coming freshmen. Most of the university freshmen class for fall term will have been accepted by March of that year, and will involve about 10,000 students. A BSTEP information letter and brochure will be sent to each student when he is admitted to the university. In addition MSU admissions officers who visit Michigan high schools will be briefed and given printed materials for interested pupils.

Eleven Elementary Intern Program (EIP) Centers and seventeen Student Teaching Centers around the state will be focal points for the dissemination of information about BSTEP.

Traditionally, freshmen students at Michigan State University attend orientation clinics during June and July prior to their first term on campus in September; two or three groups of students per week receive orientation throughout June and July. Emphasis will be placed then on recruiting as BSTEP students those who have elected elementary and special education or liberal arts as a major.

Two BSTEP teams, of three faculty members each, will visit the Summer orientation clinics to represent the program to students.

They will explain the philosophy, the differences in curriculum and objectives between BSTEP and the traditional teacher-education program, and the advantages of a behavior-oriented program. Students with an interest in the program will be counseled individually concerning program elements. A data card will be obtained from each student and will be reserved along with admissions records for the BSTEP Selection Committee which will meet early in August.

Students with a special interest in working in urban settings and particularly with minority group children will be referred to the Student Selection Committee by the MSU Urban Affairs Center.

In preparation for succeeding years, more long-range recruitment activities will be devised:

Printed Material

1. Brochures for distribution to prospective students will continue.

2. Information packets will be sent to professional organizations, such as Michigan Education Association, American Federation of Teachers, American Home Economics Association, Council on Exceptional Children.

3. Posters and brochures will be distributed to high-school counselors.

Other Communications Media

1. Presentations on public-interest program through local TV

2. Preparation of slides and a promotional film by MSU-TV

3. Television and radio spot commercials

4. Prepared spot-news and time-copy releases for school and public newspapers

5. Articles for submission to professional journals

Local Community Contacts

1. High schools and Community College counselors

2. Advisors for Future Teachers clubs

3. Directors of student cooperative programs and of career-development programs of Community Action Agencies

4. Special programs in schools
   a. Career Day
   b. High school assemblies
   c. Campus programs--4-H, Explorer Program, Future Farmers of America, All High School Junior Day, National Merit Scholar meetings
5. Community extension agents in small and rural communities
6. Community Agencies; Urban League, CAP, PTA
7. High school teacher aides

State Organization Contacts

1. Department of Social Services for contact with potential nursery school teachers
2. Michigan Education Association
3. State Department of Education

Campus Organizations

1. Fraternities and sororities
2. Scholastics honoraries
3. Dormitory councils
4. Black Liberation Front
5. Associated Students of Michigan State University

Specific Procedures for Screening Individual Students

All students receive their initial screening by the University Admissions Office. Selection for BSTEP will be made from those students already admitted to the university.

Students will be considered for entry into BSTEP on the basis of interest in electing teaching as a profession and aptitude for the intellectual and vocational tasks required for clinical behavior style teaching. In order to judge interest and aptitude for elementary education, background information will be collected on as many areas of each student's life as possible.

Personal Information. The BSTEP entrance requirements will follow MSU entrance requirements. However, the relative importance of specific kinds of background information may differ from that of the regular entrance precedure because of the nature of the BSTEP educational experiences and the availability of extensive support services for students. The following information will form the basis of selection procedures:

1. High school grades will be an integral part of the admissions evidence of past academic performance. If an applicant's grades are not at a level to indicate success in the program, additional information supporting the application must be submitted. This information can include special letters from teachers or counselors and details of extenuating circumstances (personal, social or economic).

2. School rank of the students will be considered with all other information as evidence of academic competence.

3. Test scores in high school aptitude tests will be used in making the admissions decision. Out-of-state students will be required to submit Scholastic Aptitude Test scores as required by the university.

4. Recommendations of teachers, counselors and high school principals will be given appropriate consideration as evidence supporting entrance to the program.

5. Leadership in curricular and co-curricular activities and other evidences of leadership qualities will be weighed.

6. Motivation potential of the student for college and teaching will be determined from recommendations, the student's statement of goals and aspirations, and personal interviews.

7. Students who may not meet regular university entrance requirements, but who have been screened and recommended by the Urban Affairs Center, will be considered for BSTEP entrance.

Class Composition. Other factors also will be considered. The BSTEP class must be reflective of the diversity in American society. High priority will be given to maintaining a student mix which includes:

1. Students from urban, small town, and rural backgrounds

2. Broad racial and ethnic representation of white, black, Mexican-American, American Indian, Jewish, foreign

3. Broad range of academic achievement potential

4. Students with diverse and unusual interests

5. Wide range of socio-economic backgrounds

6. Representative ratio of males and females

Selection Committee. Data on prospective students will be collected by the two three-man teams of faculty members during their contact with summer orientation clinics. In addition, each student will discuss his aspirations with a member of the team in one-to-one counseling situations. These data collected during the orientation clinics, the personal interview, and the admissions folder will broaden the basis on which entry judgments are made, and will form part of the initial data collected to assess the viability of the program for individual students.

The faculty members who conduct the orientation program will meet during the first week of August as the Selection Committee. For a diversity of ideas and points of view in student selection, the six-man committee will have been drawn from university areas involved in teacher education:

Committee Members

1 - Professional Use of Knowledge
1 - General-Liberal Education
1 - Scholarly Modes of Knowledge
1 - Human Learning
1 - Family and Child Sciences Department
1 - Clinical Experiences

On the basis of all available information, the committee will select 100 students as the first class. A record will be kept of students who were interested but not selected. These students may be used to fill vacancies as they occur.

Students will be notified of their selection before the end of August. The schedule of registration-week orientation activities for BSTEP students and a brochure detailing possible financial sources will be included in the notification.

Transfer Students. Students may be added to BSTEP during the first and second years of the program as class vacancies are created by students leaving the program. Individual evaluations will be made to determine the appropriateness of each transfer student's work. Transfer students may be accepted from other institutions or from within MSU. No transfer students will be accepted during the first two years of the program to provide time to develop ways of assessing equivalency between transfer courses and BSTEP components.

Procedures for Selective Retention of Students

Objectives of the student-selection procedures for BSTEP are to develop a class which is broadly representative of American culture and to nurture the maximum potential of each individual.

Evaluation. Evaluation in BSTEP will be a continuous process involving both faculty and students. There will be built-in checkpoints where regular evaluation is made of each student. Continuous evaluations will be made by each instructor.

Evaluations will be based on performance in relation to behavioral objectives for each learning module. The faculty in each area will make the appropriate assessment of modules in that area. Clusters of modules which comprise a particular learning will be used as the basis for performance assessment. When a particular learning task has been completed to the satisfaction of instructor and student, an Information Retrieval Card will be processed. The card will record in the Information Retrieval System the module cluster and the student's level of proficiency. Evaluation conferences may be initiated by student or instructor. Instructors will bring progress reports up to date at five-week intervals. Instructors also will be encouraged to make weekly progress reports.

A profile on each student will be examined at the end of each 10-week period by the Evaluation Committee. The profile will include the learning tasks completed and the level of proficiency attained in each area. Students whose academic profiles indicate difficulty will be sent to their advisor for counseling. Together, the student and the advisor will seek solutions such as tutoring, a lighter course load, psychological counseling, etc.

Evaluations of a student's profile need not wait until the end of the 10-week period. An academic profile may be secured from the Information Retrieval System on a student at any time. Counseling sessions may be initiated by an instructor, the advisor, the Evaluation Committee, or by the student.

The Evaluation Committee will decide when a student's progress profile indicates that he should not remain in the program. The evaluation committee will be composed of three faculty members whose major interest is in the following areas:

1 - General-Liberal Education
1 - Scholarly Modes of Knowledge
1 - Professional Use of Knowledge

To assess progress, student input, and reactions of faculty and student to the program, a research staff of two will be employed. This staff will conduct concurrent and long-range research on student participation of the program.

Counseling. Each student will be assigned an advisor in the College of his major on entrance into the program. A faculty member's advisement load will be 25 students and constitute a fourth of his teaching load. Counseling appointments may be initiated by the advisor or by the student.

Counseling for psychological problems will be referred to the Student Services Counseling Center. Medical problems will be referred to Olin Health Center for diagnosis and treatment.

Financial counseling will be the advisor's responsibility. Close contact will be maintained with the Scholarship and Loans Office for solutions to financial problems.

Tutoring and Student Support. Tutorial services will be available for any faltering student. During the first year of the program, tutors will be graduate students whose majors are in the areas in which students are having difficulty. After the first year, the graduate student tutors will be supplemented by upper classmen in the program. Students will tutor underclassmen in components which they have completed. This tutoring experiences will be considered a form of clinical experience and part of the training cycle. Group-study sessions will be arranged with upper-classmen serving as monitors and attended by students having difficulty. All students will be involved at some time in tutoring individuals or monitoring the group study sessions.

The Urban Affairs Center will maintain supplementary tutorial services for disadvantaged students who are admitted through its recruitment program.

Separation. Decisions to separate students from the program must be based on sound evaluation of all pertinent factors.

Continued participation in the program is based on the student's success in acquiring those behaviors identified as essential to teaching. When a student's academic profile is unsatisfactory, the student and his advisors will be notified. The student with the aid of his advisor will decide on the appropriate steps to improve his achievement. The student's progress will be watched closely for a ten-week period. If the student's academic profile shows sufficient improvement, he will be retained in the program. If there is not sufficient evidence of improved achievement, the student will be separated from the program and counseled concerning programs which may better suit his interests and competencies.

Chapter 10

INFORMATION RETRIEVAL SYSTEM

Summary of Information System in Phase I

In Phase I of the Michigan State University Behavioral Science Teacher Education Program (BSTEP), an information storage and retrieval system was defined.[1] The present paper discusses the feasibility of establishing a prototype of that information system at MSU. Major themes and procedures described in the 1968 Report are still considered valid. The remarks in this section are intended to review briefly the salient points of that report; however, for details the reader is referred to the original.

One premise guiding the design of the information system is that the University operates in response to a set of interacting values which determine the kinds of information to be collected, analyzed and disseminated by the system. In Figure 10:1, the series of interlocking ellipses represent the interaction of values of groups such as boards of education, state departments of education, university faculties, citizens' groups, students, public school teachers and administrators, and groups such as the National Education Association, the American Federation of Teachers, and others. Implicit in each of these groups is a set of values with preferences for certain types of learning experiences expected in teacher education programs in universities and public elementary schools.

It should be apparent that these different value systems are sometimes in direct opposition to one another and at other times they support or complement one another. The interlocking ellipses suggest that certain groups or organizations share some values. Indeed, the illustration suggests that members of one or more of the organizations may be the same persons.

The interaction of these value systems leads to certain policies, policy decisions, procedures and regulations of the University administration. Figure 10:1 indicates how the University administration

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[1] Michigan State University, "Information Storage and Retrieval System," Behavioral Science Elementary Teacher Education Program, East Lansing, October 1968, Vol. III, Section X, pp. 1-63.

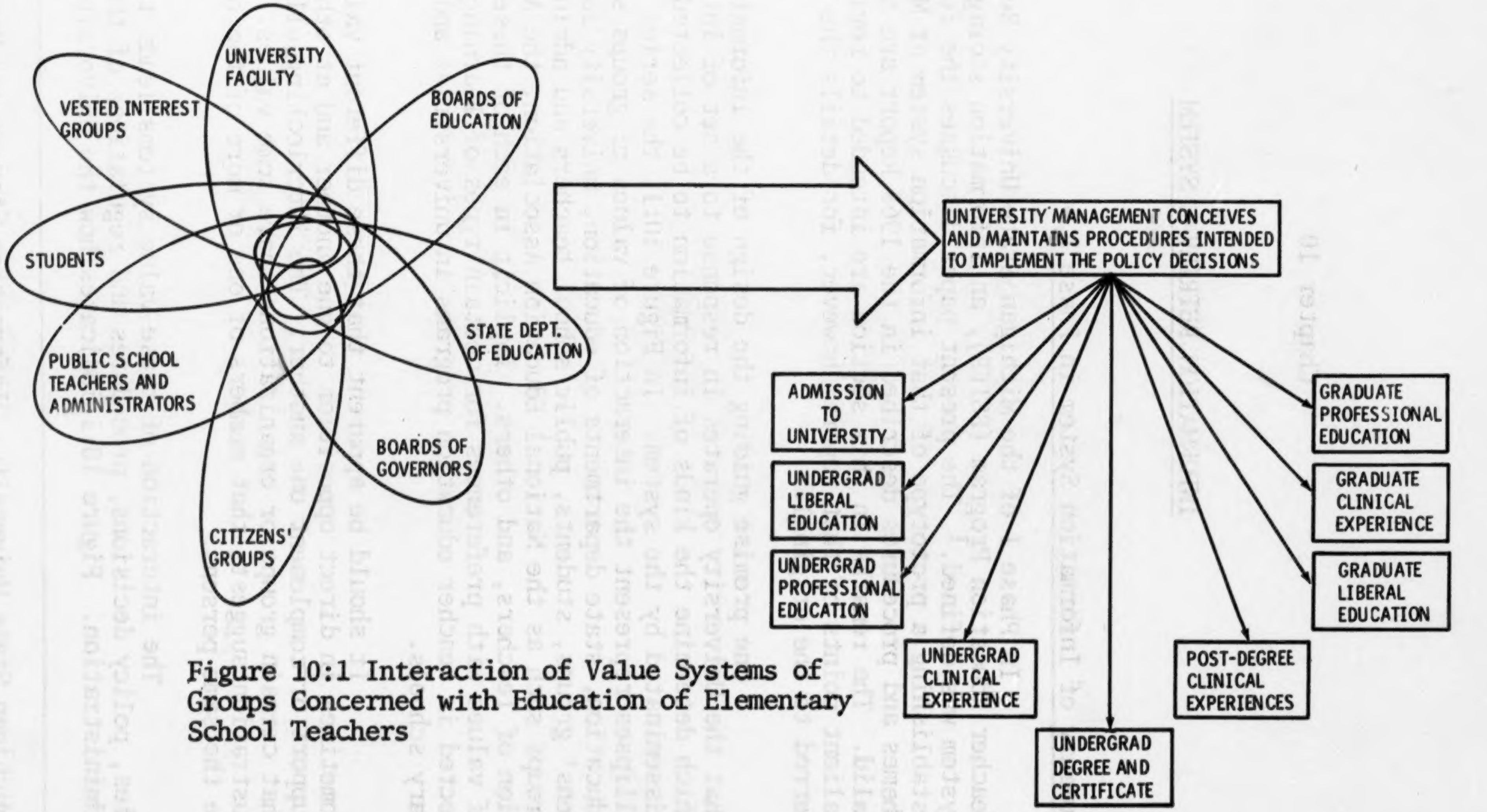
VESTED INTEREST GROUPS
UNIVERSITY FACULTY
BOARDS OF EDUCATION
STUDENTS
STATE DEPT. OF EDUCATION
PUBLIC SCHOOL TEACHERS AND ADMINISTRATORS
BOARDS OF GOVERNORS
CITIZENS' GROUPS
UNIVERSITY MANAGEMENT CONCEIVES AND MAINTAINS PROCEDURES INTENDED TO IMPLEMENT THE POLICY DECISIONS
ADMISSION TO UNIVERSITY
UNDERGRAD LIBERAL EDUCATION
UNDERGRAD PROFESSIONAL EDUCATION
UNDERGRAD CLINICAL EXPERIENCE
UNDERGRAD DEGREE AND CERTIFICATE
POST-DEGREE CLINICAL EXPERIENCES
GRADUATE PROFESSIONAL EDUCATION
GRADUATE CLINICAL EXPERIENCE
GRADUATE LIBERAL EDUCATION

Figure 10:1 Interaction of Value Systems of Groups Concerned with Education of Elementary School Teachers

collects information on students seeking admission to the University, and admitted students in liberal arts, professional colleges, field experiences, undergraduate and graduate programs. Under existing procedures a tremendous amount of information is collected about each student who attends the university or applies for admission.

The BSTEP information system must be designed to be compatible with the existing machinery for collecting information about students, but it also must respond quickly and accurately to requests for information from BSTEP faculty and students. Since an information system can be encumbered, even rendered helpless, by attempts to collect and process large amounts of information about each member in the system, restrictions are needed on the amount of information to be collected. The BSTEP faculty will have to define those portions of information which are important and relevant: a) to an understanding of students' progress; and b) to decisions on use of BSTEP resources to help students in need. It becomes imperative to resist temptation to collect all possible information about all students, faculty, expenditures, equipment.

A second major element in BSTEP is the unique set of modules described briefly in the overview of this Phase II Report and in greater detail in the three volumes of the Phase I Report. In BSTEP, the modular unit is defined as an "experience", with measurable input generating measurable output. Each module is described in terms of its specific objective, experience, evaluation, and other parameters, such as physical setting, student level, prerequisites, and materials required. Each module represents the professional judgment and value system of the MSU faculty members who conceived and stated it.

The Phase I Report presented an initial collection of 2,700 different modules and described the very large number of possible combinations. The Report included typical forms to modify modules or to analyze modular clusters for individual students or groups of students. Since these clusters of modules can be combined in any one of several thousand different possible combinations, the processing power of a computer is favored to create an adequate information system. The collection of BSTEP modules was keypunched and tested for operation according to the Basic Information and Retrieval System (BIRS) developed by Dr. John Visonhaler at MSU.[2] The BIRS system is considered essential to future analysis of BSTEP modules and exchanges of information among BSTEP faculty and students.

A third major consideration in designing the original proposal was to establish an information system that would be accessible to all BSTEP professional staff and students. This concept is illustrated in Figure 10:2, which shows the existing central processor (computer) at MSU serving the needs of MSU faculty and students to support their stud-

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[2] John Vinsonhaler, Technical Manual Basic Indexing and Retrieval System (BIRS 2.5), (East Lansing, Mich., Michigan State University, Jan., 1969).

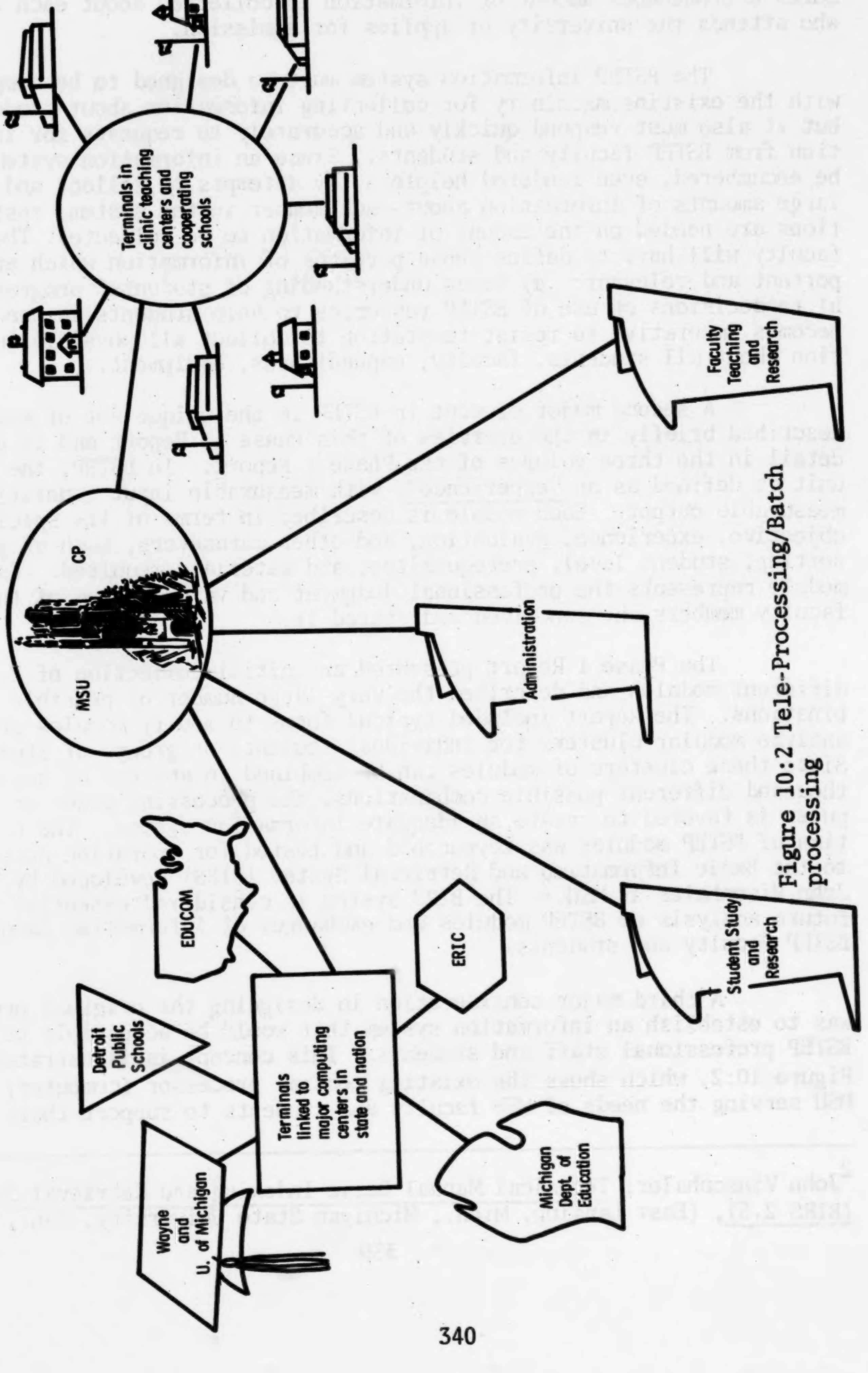
MSU
CP
Terminals in clinic teaching centers and cooperating schools
Faculty Teaching and Research
Administration
Student Study and Research
ERIC
EDUCOM
Detroit Public Schools
Terminals linked to major computing centers in state and nation
Michigan Dept. of Education
Wayne and U. of Michigan

Figure 10:2 Tele-Processing/Batch processing

ies and research. It also must respond to the information processing requirements of BSTEP management. This service could take the form of teleprocessing or batch processing of data according to the user's needs. The system could draw upon BIRS to process natural language data; basic statistical analyses could be conducted by standard computer library programs; computer-assisted instruction could be undertaken with languages such as COURSEWRITER, and it could use other sophisticated software packages currently operating on third generation hardware such as MSU's Control Data Corporation model 6500.

The model information system can establish terminals or other linkages with clinic-school centers in cooperating elementary schools so that students from BSTEP would bring with them to the clinic centers the information processing power of the University. Moreover, the model information system can build existing linkages among MSU and other computing centers or information systems in the state, such as Wayne State University, University of Michigan, Detroit Public Schools, Michigan State Department of Education, and national organizations such as ERIC and EDUCOM.

As a case in point, the National Science Foundation and the State of Michigan recently funded a project to create a hardware system for a real-time linkage between the computing centers at Michigan State University, University of Michigan, and Wayne State University. This will enable their faculties and students to use terminals or draw upon batch processing services available at any of those institutions.

This section has indicated the scope of the model designed for BSTEP. It is intended as a flexible design to accommodate itself to improvements in information technology, changing value systems, and changing demands of faculty, students, and other responsible leaders who may influence the BSTEP program.

Procedures for Feasibility Study

A study was undertaken of recent research literature relating to information processing systems as well as reports on operating systems in industry, government agencies, and other universities. Currently, many projects are underway in this field, as indicated by the 785 distinct projects reported in the National Science Foundation Report on Current Research and Development in Scientific Documentation, Report #15.[3] The study did not attempt to identify the most important or most promising projects, since such a discriminating appraisal was well beyond available resources. The purpose of the study was simply to collect evidence of existing information systems which utilize computer processing and which appear to embody some of the information processing tasks which characterize the BSTEP Information System.

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[3] Massachusetts Institute of Technology, Abstract 7144, Current Research and Development in Scientific Documentation, No. 15. (Washington, D.C.: National Science Foundation, U.S. Govt. Printing Office, 1969).

It is assumed that large corporations and government agencies are as complex as Michigan State University, and that these institutions face similar information processing problems. Successes and failures in these corporations or agencies could suggest similar successes or failures to be anticipated for the information system of BSTEP.

Developmental costs for the systems or their elements were not stated, although estimates of equipment costs and personnel expenditures frequently were cited. It is assumed that a given information system operating successfully in an institution or setting similar to BSTEP constitutes verifiable evidence that such an information system is feasible. From operating models one could consider several different information systems, and select the most promising components of each, to build in an eclectic fashion to satisfy BSTEP requirements and stay within BSTEP financial resources.

To supplement the study of information systems of organizations comparable to BSTEP, computer runs were conducted with the BIRS programs and the data bank of existing modules to identify problems which may occur in satisfying the information requests of faculty and students. These trials also made it possible to estimate time and cost considerations in implementing BSTEP with the BIRS programs.

Functions and Operating Characteristics

The major function of the BSTEP information system is to identify and retrieve documents useful for making decisions about the general and professional education of future teachers in BSTEP. Ideally, an information system can retrieve all documents needed by the users at a trivial cost in time and money, and present the user with the required information in a form which is simple and easy to use.

In BSTEP there will be five major categories of documents to be utilized. As shown in Figure 10:3, the five types of documents constitute the major input to the BSTEP Information System. First, there are documents which relate to students' applications for admission to the University and to BSTEP in particular. These include correspondence, registration forms, transcripts, and other documents required of students who apply for admission to the University and who continue their studies in one of the university colleges. These documents ordinarily are used by the administration to make decisions on status of students, expected enrollments, and appropriate ways to allocate the University's resources to its different divisions. The documents are used to provide an accounting of the University's finances to the Board of Trustees and to the State Legislature.

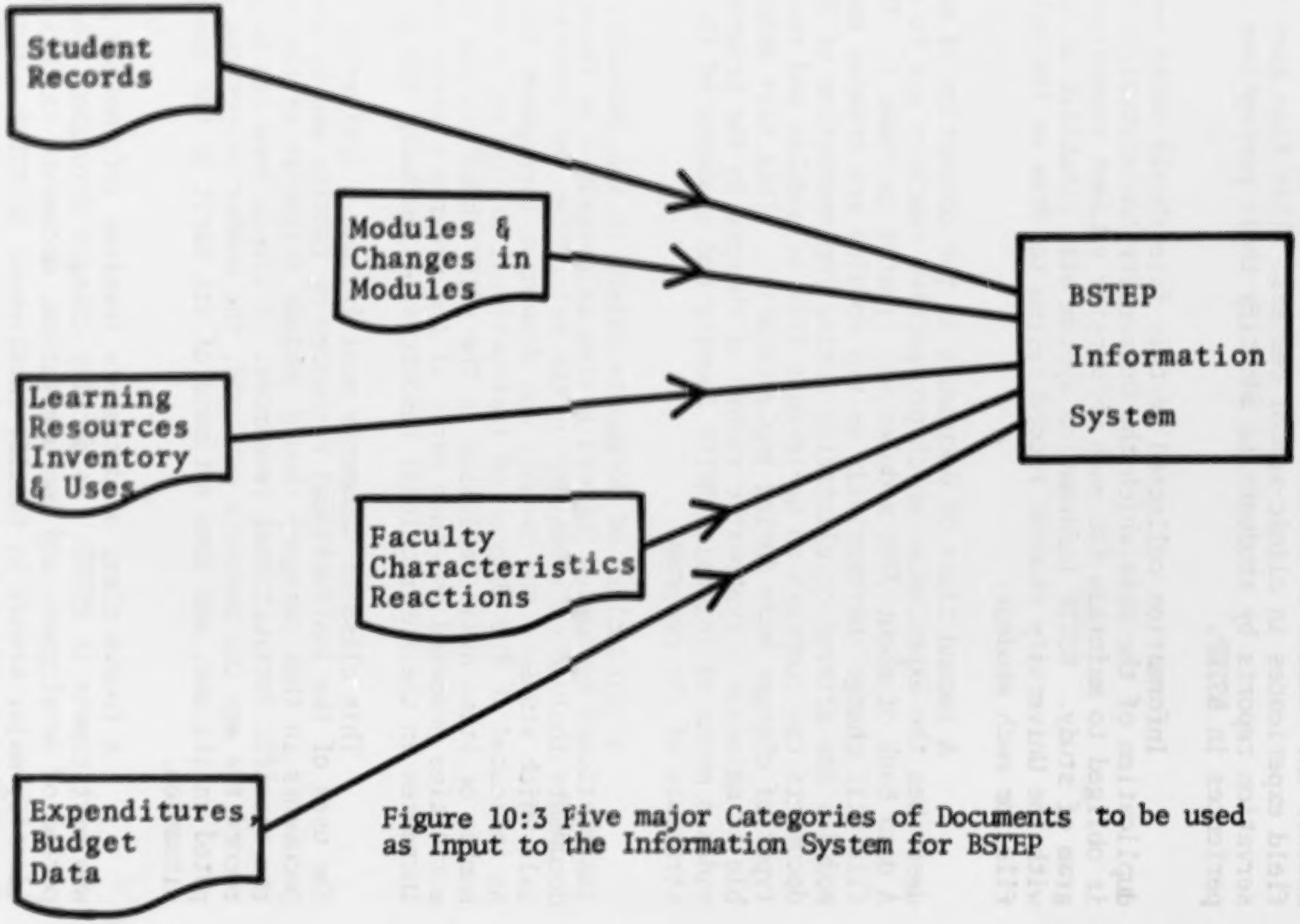
Student Records
Modules & Changes in Modules
Learning Resources Inventory & Uses
Faculty Characteristics Reactions
Expenditures, Budget Data
BSTEP Information System

Figure 10:3 Five major Categories of Documents to be used as Input to the Information System for BSTEP

In addition to these general types of documents, the student record category includes information regarding orientation clinics planned and directed for entering students. It contains documents relating each student's university work and scholarship to BSTEP criteria for selection and retention. The file also includes periodic evaluations of the student by faculty in each of the components of BSTEP, whether the student is involved in studies on campus or in one of the field experiences in clinic-school centers. This file also includes observation reports by students to identify their perceptions of their experiences in BSTEP.

Information collected in this file should avoid unnecessary duplication of the data which the University Administrative Data System is obliged to maintain for each university student regardless of his program of study. BSTEP Information System will establish an interface with the University student record system to draw on the existing data file for each student.

A second class of documents is the collection of modules which describes the experiences which prospective teachers are to encounter. A data bank of about 2700 modules was created in Phase I. This existing file will change substantially as new modules are created and existing modules are altered or eliminated during implementation of BSTEP. These documents can comprise an up-to-date file of modules and record the types of changes made during implementation. This file makes it possible to maintain a systematic record of changes in the program, and provides a means of informing BSTEP faculty and students of the current structure of the program.

A third class of documents refers to the inventory of the Instructional Resources Support System as described in Phase II. These documents include an inventory of the major items of instructional materials which students and faculty can draw upon throughout the program. As indicated in the chapter on Instructional Resources, a very large number of items await inclusion in the BSTEP inventory and the number of activities proposed in other parts of the program clearly anticipates increases in the instructional resources to implement the program.

This class of documents must include a systematic record of the uses of the instructional resources by faculty and by students. Documents in this category should include estimates of the usefulness of the specific instructional resources. A simple form can be provided to record the way the resource was used, the number of persons who participated in its use, and some estimate of its merit in the specific situation.

A fourth class of documents involves information about faculty who participate in BSTEP. As faculty changes throughout the five-year period of development and implementation, documents in this file can identify major trends in faculty involvement in BSTEP. This also makes it possible to identify the extent to which the tenured faculty is participating in and shaping the direction of BSTEP, so that if federal funds were withdrawn, the program could continue to operate and extend its influence through their activities.

Documents in this category include information about the work time each faculty member invests and his professional contributions. They can contain opinions or position papers generated by faculty to express their views about needed changes in BSTEP. This file is not conceived as a secret dossier to be used for punitive action against uncooperative faculty. Rather, it can be a means of collecting the thoughts and considered judgment of one of the most important resources which any University can claim, its faculty. The very nature of this file requires BSTEP administration to encourage contributions to the file by faculty members, and to be discrete in maintaining the privacy of confidential information which faculty may send to the file.

The fifth class of documents relates to expenditures of funds for materials, equipment, personnel, and other items for development and implementation of BSTEP. Documents in this category include requisitions for materials and equipment, salaries of participating faculty, expenses for lease of instructional materials, consultants' fees, travel expenses, and similar items. Once again, an interface is needed with the University Business Office to minimize duplication of effort, enable BSTEP information system to draw upon data which directly relate to expenditures for the project, and enable BSTEP administrators to determine a) total expenditures, b) distribution of expenditures among components in BSTEP, c) benefit/cost estimates, and d) other financial data needed to make decisions about future investments of BSTEP resources. This is discussed further in Chapters 11 and 12.

Table 10:1 estimates the number of documents to be processed in BSTEP. In the literature of information science various attempts have been made to project the numbers of publications or reports which exist throughout the world or in a particular scientific discipline.[4] Ordinarily, these estimates are couched in terms which urge the reader to be cautious in interpreting the estimates, because of difficulties in securing accurate empirical data and then extrapolating beyond these crude estimates. Moreover, the estimates are in reports which range from a single page to more than 100 pages. Bourne argued that the increase in publications is an exponential relationship between numbers of persons who generate documents and total number of documents produced. Mantell[5] and Savage[6] disagree with Bourne and maintain that increase is

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[4] Charles P. Bourne, "The World's Technical Journal Literature: An Estimate of the Volume, Origin, Language, Field, Indexing and Abstracting," American Documentation, April, 1962, pp. 159-168.

[5] Leroy Mantell, "On Laws of Special Abilities and the Production of Scientific Literature," American Documentation, January, 1966, pp. 8-16.

[6] T. F. Savage, "Users Versus Documents," American Documentation, July, 1966, p. 141.

TABLE 10:1 ESTIMATES OF NUMBERS OF DOCUMENTS WHICH MAY BE PROCESSED DURING BSTEP DEVELOPMENT AND IMPLEMENTATION

Category of Persons Generating Documents		1970-71	1971-72	1972-73	1973-74	1974-75
Total Students:	Experimental	100	200	300	400	400
	Control	100	200	300	400	400
University Faculty:	Full-time	20	40	60	80	80
	Part-time	130	110	90	70	70
Professional Staff in Public Schools:	Teachers for experimental group	100	200	300	400	400
	Teachers for control group	100	200	300	400	400
Total Number of Participants Estimated for each year of Project		550	950	1,350	1,750	1,750
Type of Documents Created	**Basis for Estimates**					
Student Records:	Full time load for student is usually 16 class hours per week. Estimate 1 evaluation or student reaction per 2 class hours (8 documents/wk for 48 weeks for each student)	76,800	153,600	230,400	307,200	307,200
Experience Modules:	Estimate 10% change in contents of module data bank for each week (10%) (2700 modules) (48 weeks)	12,960	12,960	12,960	12,960	12,960
Inventory and Use of Learning Resources:	Estimate 100 items inventoried per week. (100 items/wk) (48 wks)	4,800	4,800	4,800	4,800	4,800
	Estimate 1/2 of students use at least 1 item during each week (1/2 students/wk) (48 wks)	4,800	7,600	14,400	19,200	19,200
Professional Staff:	Estimate 1/5 of all BSTEP participants will contribute each week (1/5 participants/wk) (48 wks)	5,280	9,120	12,960	16,800	16,800
Budget:	Requisitions, receiving orders, travel pay, billing receipts, and similar expenditures (100 items/wk) (48 wks)	4,800	4,800	4,800	4,800	4,800
Sub-total	(Estimated to nearest 100 documents)	104,600	192,900	280,300	365,800	365,800
Documents generated among BSTEP participants for reports, memos, correspondence. (Estimate 20% of total documents uses as input to BSTEP Information System)		20,900	38,600	56,000	73,200	73,200
Estimate of Total Number of Documents to be Stored, Analyzed, and Retrieved		125,500	231,500	336,300	439,000	439,000

a linear function which does not justify emotional cries of "information explosion." In any event, the authors seem to agree that the number of persons who contribute documents is a major determinant of the size of the file.

Table 10:1 also provides an estimate of the number of documents which may be generated by BSTEP. Throughout this report document means a single sheet or card, rather than a collection of many pages. As with other projections of file size, the reader can consider these figures as rough estimates which are probably underestimates the number of documents to be generated by BSTEP activities.

As shown in Table 10:1, it is an oversimplification to consider only 100 experimental BSTEP students added to the project each year. The Evaluation Task Force may seek information from a comparable group of non-BSTEP students. University and public school faculty also will continually appraise students in the experimental and control groups. Moreover, the collection of documents generated by BSTEP will have an interaction effect to generate additional documents within components, by participants in BSTEP, and by persons or organizations not directly involved in BSTEP activities. It may be that the estimated 20 percent of total documents input cited in Table 10:1 may be a substantial underestimation of the total number of documents generated by interaction.

Microfilm and Computer System

One major agent in the information system for BSTEP is a microfilm file to encompass all BSTEP documents so that they are readily accessible, easily duplicated and disseminated, and in a highly compact form. The second major agent in the system is a set of programs developed at MSU by Dr. John Vinsonhaler.[7] The programs are to be used to conduct searches and analyses of the modules and document indices. Typical forms in these analyses were presented in the 1968 Report.

In addition to serving the information processing needs of BSTEP, the coordinated use of microfilm and computer systems has an important benefit for BSTEP students. Familiarity with microfilms is possible with the tremendous resource of information accumulating in the ERIC Clearinghouses. Coordinated use also provides various microforms and simple computer command languages, such as BIRS, to create information systems for the students' academic and professional needs. Familiarity with these two major instruments of information technology will be extremely important to students and faculty in the next two decades.

Figure 10:4 illustrates the relationships among the various

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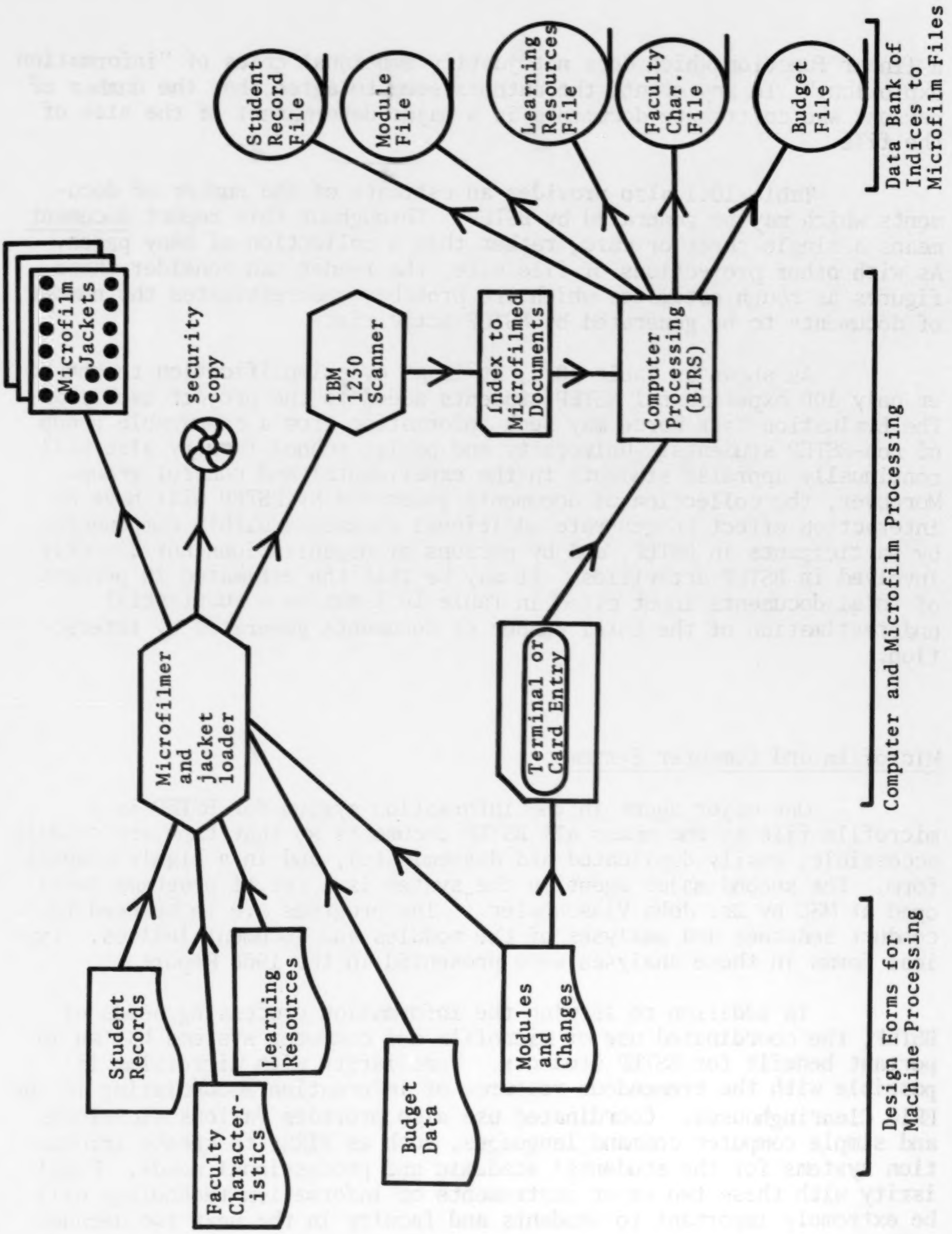
[7] Vinsonhaler, Technical Manual.



Student Records
Faculty Character- istics
Learning Resources
Budget Data
Modules and Changes
Microfilmer and jacket loader
Terminal or Card Entry
security copy
Microfilm Jackets
IBM 1230 Scanner
Index to Microfilmed Documents
Computer Processing (BIRS)
Student Record File
Module File
Learning Resources File
Faculty Char. File
Budget File
Design Forms for Machine Processing
Computer and Microfilm Processing
Data Bank of Indices to Microfilm Files

Figure 10:4 Flowchart Illustrates Steps in using Original Documents to create Microfilm File and Computer Data Bank

elements in the microfilm file and the computer established data banks. The five major categories of documents shown at the left in Figure 10:4 are the basic instruments used for input in the BSTEP information system. Specifically, these are student records, learning resource data, faculty characteristics, budget data and the experience modules including changes to be made in the existing file of modules.

An important consideration in this stage is to coordinate design forms for all five types of documents so that an adequate index of each document is achieved by simply passing the pre-coded document through any one of several scanning devices. The IBM Optical Scanner is specified in the figure simply because such a unit is in operation at MSU. The precoding is done by machine before the documents are distributed, or a student can place his identification number in some portion of the document.

Another coding system uses magnetic ink characters with relevant text printed on the documents for reading by any of several optical character readers and transfer of information to the student's record file. This type of coding typically is used by banks and other companies which process large numbers of documents.

As shown in Figure 10:4, the original document is passed through the microfilmer and after being developed is loaded into a microfilm jacket for a particular student. The document is placed in a particular portion of the jacket, which corresponds to its type of document whether correspondence, transcript, observation report, or evaluation. Simultaneously, the microfilmer prepares another copy to serve as a security copy in the event that the jacket or the original copy is lost or damaged.

Since the microfilmer can process about 20,000 to 30,000 documents per hour, including computer printouts, it is an important agent in coping with the tremendous number of documents implicit in BSTEP.

As shown in Figure 10:4, it is necessary to establish linkage between the microfilm file and the computer system. This linkage is initiated with the IBM 1230 Optical Scanner to scan each document and produce an indexed IBM card for it relating to each student participating in BSTEP. Card output rate from the scanner is about 500 to 800 cards per hour. The card output becomes input to the BIRS programs to establish a data file for the University documents and another file for the anecdotal documents. A faster scanner is utilized as the demand for information processing increases.

Figure 10:4 also indicates how new experience modules or changes in existing modules are entered by means of a remote terminal or via IBM cards in the batch processing mode. BIRS programs are activated to establish another data bank of modules also classified according to certain specified fields, i.e., objective, setting, experience, evaluation.

Figure 10:5 shows the manner in which questions can be routed for information from the system about a student or group of students or index variables. The user goes directly to the microfilm file of jackets which are alphabetically arranged according to names of students or faculty, budget accounts, or module components. He can view any or all documents in the jacket by using the microfilm reader, and produce an 8½" x 11" print of the microfilm chip for about 5 cents.

The user also has access to the microfilm file through indices periodically prepared by BIRS. One listing might be according to student name, while another listing might be according to student identification number, and a third according to the student's curriculum. The reader undoubtedly can supply other useful forms of listings.

Finally, the user may not find any of the prepared listings helpful to him, and may wish to use BIRS programs to conduct a search of one or all of the data files. The output from such a search would be a listing specifically designed to meet the requirements of the user. In any event, the user still uses the listing to examine the microfilm file.

As shown in Figure 10:5, the user also calls for various analyses of the indexes contained in the five data files.

Feasibility of the Microfilm-Computer System

Is the microfilm system capable of processing the large volume of documents necessary in BSTEP? At a reduction ratio of 24:1, 100 feet of 16mm film records about 2,000 documents at a cost of about $5 per 100-foot magazine. For $100 worth of film, the microfilmer records about 2×10^6 documents at rates between 20,000 and 30,000 documents per hour. Reports of microfilm use in small plants and large industries are abundant.[8] If the volume increases to levels which rival Lockheed Missile and Space Corporation, it is possible to step up to the direct conversion of computer tape to microfilm or direct reading of documents by optical character readers.[9] However, the present stage of the information system for BSTEP does not justify either computer tape to film or optical character reading instrumentation.

Another alternative for reduced costs and increased volume of

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[8] Anthony Oettinger, Run, Computer, Run, (Cambridge, Mass., Harvard University Press, 1969).
"A New Ally for Records Management," Business Automation, May, 1969, pp. 51-54.
"Mini Information System," Business Automation, July, 1969, pp. 47-49.

[9] W. A. Kozumplik and R. T. Lange, "Computer-Produced Microfilm Library Catalog," American Documentation, April, 1967, pp. 67-80.
Arnold Keller, "OCR Update," Business Automation, Feb., 1969, pp. 36-41.

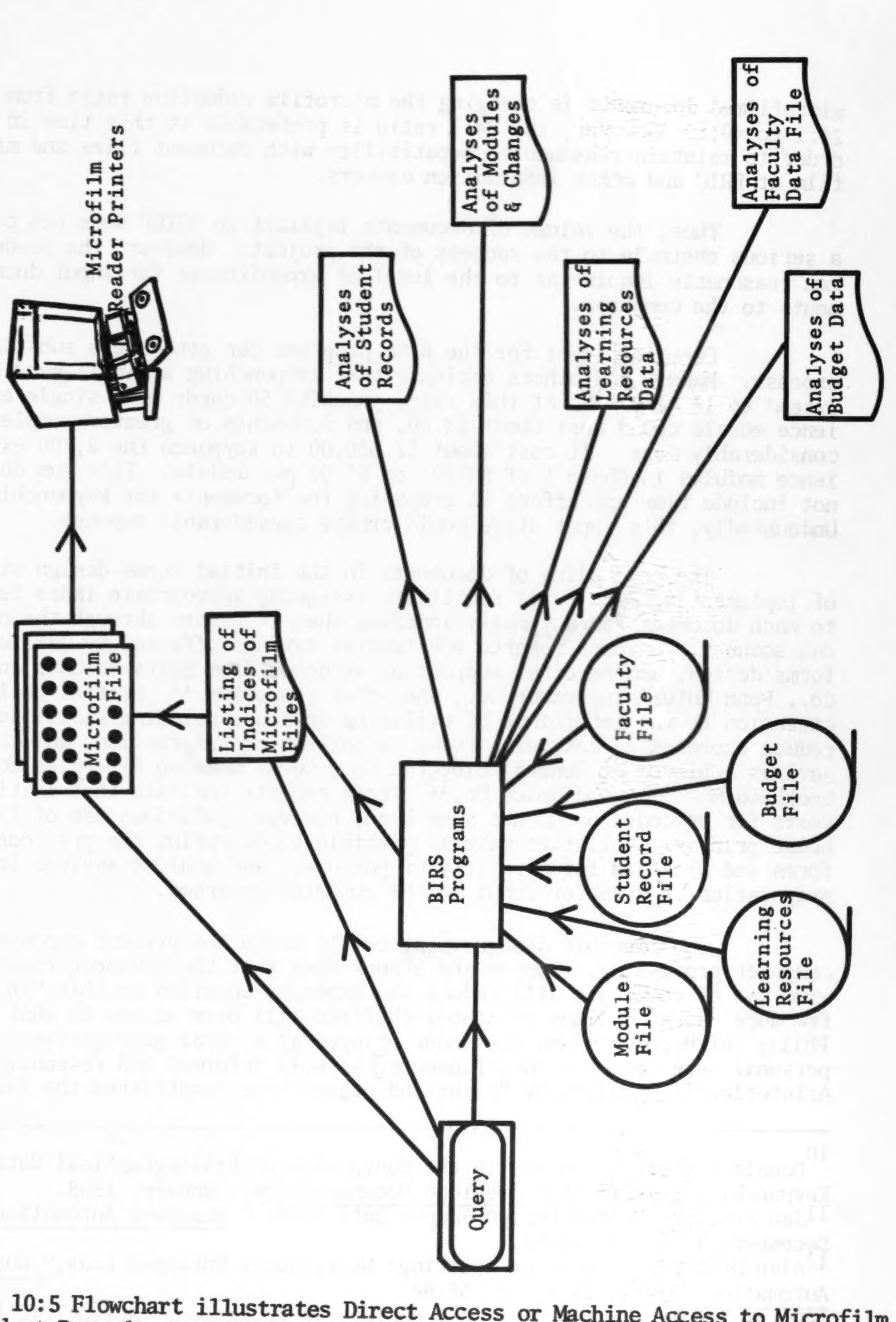
Microfilm Reader Printers
Analyses of Student Records
Analyses of Modules & Changes
Analyses of Learning Resources Data
Analyses of Faculty Data File
Analyses of Budget Data
Microfilm File
Listing of Indices of Microfilm Files
BIRS Programs
Faculty File
Budget File
Student Record File
Learning Resources File
Module File
Query

Figure 10:5 Flowchart illustrates Direct Access or Machine Access to Microfilm Files of Student Records, Learning Resources, Faculty Data, Budget Data or Experience Modules

microfilmed documents is changing the microfilm reduction ratio from 24:1 to 40:1. However, the 24:1 ratio is preferable at this time in order to maintain reasonable compatibility with document files and microfilm at ERIC and other information centers.

Thus, the volume of documents implicit in BSTEP does not pose a serious obstacle to the success of the project. However, the reader can reasonably inquire as to the level of expenditures for input documents to the computer.

Creating input for the BIRS programs can generate a substantial expense. Hammer and others estimate that keypunching a single card can extend to 14 cents.[10] At this rate, punching 50 cards of a single experience module could cost about $7.00, and documents of greater complexity considerably more. It cost about $2,600.00 to keypunch the 2,700 experience modules in Phase I of BSTEP, or $1.00 per module. This sum does not include time and effort in preparing the documents for keypunching. Undoubtedly, this input stage could create considerable expense.

The pre-coding of documents in the initial forms-design stage of implementing BSTEP will facilitate assigning appropriate index terms to each document for automatic indexing when it passes through the optical scanner. Snyders reports substantial savings effected by careful forms design, and he cites supporting evidence from Sears Roebuck and Co., Penn Mutual Insurance Co., and other companies.[11] Drattel calls attention to the importance of utilizing in-house printing facilities to reduce expenses in designing forms to collecting information, and cites savings achieved at General Electric Co., Owens Corning Fiberglas Corp., Lockheed Missiles and Space Co.[12] These reports indicate that initial costs for precoded documents seem high; however, judicious use of in-house printing facilities make it possible to overprint the pre-coded forms and use them for a variety of purposes, and achieve savings in the preparation of data for input to the computer programs.

Considerable disagreement exists as to the present expenses of computer processing. Suppes and others feel that the movement toward wide use of computers will reduce the expenses entailed so that "in a few more years millions of school children will have access to what Philip of Macedon's son Alexander enjoyed as a royal prerogative: the personal services of a tutor [computer] as well informed and responsible as Aristotle."[13] Studies by Knight and others have established the fact that as computers increase in size, computing costs diminish.[14] However, the current costs of computing time on an IBM 360/model 65 is about $650 per hour, and $750 per hour if the user is not a member of the university owning the computer. Prospects of a time-sharing mode are more obscure. Bauer and Hill reported estimates of time-sharing expenses per hour of terminal use as cited by the manufacturers.[15] They found cost estimates for use time ranged from $5.00 to $30.00 per hour for roughly equivalent terminal installations.

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[10] Donald Hammer, "Problems in the Conversion of Bibliographical Data--A Keypunching Experiment," American Documentation, January, 1968.

[11] Jan Snyders, "Forms Design Shapes Data Costs," Business Automation, December, 1968, pp. 44-48.

[12] Alan Drattell, "In-plant Printing: Managements Untapped Lode," Business Automation, April, 1969, pp. 58-64.

[13] Patrick Suppes, "The Uses of Computers in Education," Scientific American, September, 1966, pp. 207-213.

Oettinger is very skeptical of the economic feasibility of computers in a time-sharing mode for computer-assisted or computer-managed instruction.[16] He feels that the introduction of computers in numbers and adequate software in the schools is not feasible for the next decade. Oettinger does not question the value of the computer as an information processing tool, but he feels that educational institutions, particularly elementary and secondary schools, need considerable internal and organizational changes to use the computer for innovations reported in professional literature. Many of the indictments asserted by Oettinger deserve support. The information system must avoid pitfalls identified.

BSTEP faculty will call for brief profiles as well as detailed listings of the modules completed, or to be completed by individual students. There are now 2,700 modules which can be listed.

Trials using the BIRS 2.5 to read and print several hundred experience modules on the IBM 360/65, require approximately 100 seconds to read and print 100 modules, each of which contained 40 to 50 cards per abstract. At a charge rate of $10.00 per minute, it costs about $20.00 to read and list 120 modules. Admittedly, the time and expense of this type of listing can be reduced by internal reading and writing onto computer disks or tapes, and then using utility programs to dump the disk or tape contents. However, even if these steps reduce the expense by 50 percent, it still costs $10.00 to list 120 modules for a given student. If there are 100 requests for listings of modules for 400 students, costs become prohibitive. For this reason BIRS programs are used to conduct analyses of indexes, and microfilm file is used as a relatively inexpensive medium of storing complete documents.

On the other hand, once a given collection of experience modules is entered into the computer data bank, and a set of descriptors identified, the most expensive tasks are concluded for these documents. The data tapes which contain the selected descriptors is retained to eliminate another analysis of the same data. Only the file of descriptors must be up-dated when new modules are added or substantial changes are made in existing modules.

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[14] Kenneth Knight, "Evolving Computer Performance 1963-1967," Datamation, January, 1968, pp. 31-35.
Walter Bauer and Richard Hill,"Economics of Time-shared Computing Systems," Datamation, December, 1967, pp. 41-49.

[15] Ibid.

[16] Oettinger, Run Computer Run.

Queries about documents within the data file can be made at a modest cost from the established set of descriptors. Logical searches were undertaken experimentally with sets of 100 modules. Each question required an average of two seconds of central processor time to identify the required documents. Costs were 40 cents per question, which is still expensive but certainly in a range of expenses which can be sustained. If the downward trend in computer costs discussed by Knight and by Marron and Snyderman continues, the 40-cent cost per question can be reduced during the five years.[17]

Initiation and Maintenance Budget for Implementation Period

Table 10:2 provides a detailed budget to implement the proposed information retrieval system. These data were employed in the budget estimate in Section V.

Use of BIRS for BSTEP Data

Competency goals for trainees were defined in experience modules in the Final Report of Phase I. In that compendium, the faculties of the various colleges joined to identify the behaviors expected from the trainees. These expectations were organized into modules and loaded onto computer tapes for analysis by the BIRS programs.

Trial analyses were undertaken during the feasibility study to test retrieval capacities of BIRS programs using the BSTEP experience modules. As faculty members posed questions for searches of the data bank of modules, it became evident that the questions were not formulated in the vocabulary utilized by creators of the original modules. Therefore, a major contribution of the BSTEP information system is to assist faculty in examining the modules of their components. Faculty working within a component can consider the same student, module, and professional competency, but use substantially different terms to express their own concepts.

BIRS programs can clarify the thinking and language of the faculty within a component by generating a key-word-in-context index

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[17] Knight, "Evolving Computer Performance"
H. Marron and M. Snyderman, "Cost Distribution and Analysis in Computer Storage and Retrieval," American Documentation, July, 1967, pp. 162-164.

TABLE 10:2 TENTATIVE BUDGET FOR MSTEP INFORMATION SYSTEM

ITEM	1970 $	1971 $	1972 $	1973 $	1974 $	TOTAL $
Personnel						
Director of Information System	8,094	16,886	17,653	18,421	19,188	
Information systems analyst (full-time), Asst. Director	6,683	14,003	14,640	15,276	15,912	
SUBTOTAL-Academic Personnel	14,777	30,889	32,293	33,697	35,100	146,756
Support Staff						
Programmer (full-time)	4,620	9,672	10,088	10,504	10,920	
Consultants in EDP	1,050	2,200	2,300	2,400	2,500	
Clerical Assts.	1,575	3,300	3,450	3,600	3,750	
Secretary (full-time)	3,150	6,600	6,900	7,200	7,500	
SUBTOTAL-Support Staff	10,403	21,772	22,738	23,704	24,670	103,287
Supplies						
Input-output forms design (plates, printing chgs)	3,300	1,100	575	600	250	
Microfilm	2,625	2,750	2,875	3,000	3,125	
Microfilm Jackets	525	550	575	600	625	
IBM Cards	336	352	368	384	400	
Programming & Systems Planning Supplies, Manuals	525	330	343	120	125	
SUBTOTAL-Supplies	7,311	5,082	4,736	4,704	4,525	26,358
Services						
Central Processor time, including peripheral equip. services	6,825	14,300	14,950	15,600	16,250	
Telephone data sets and line charges	1,312	3,500	3,600	3,900	4,200	
Optical Scanning	2,520	5,280	5,520	5,760	6,000	
SUBTOTAL-Services	10,657	23,080	24,070	25,260	26,450	109,517
Equipment Rentals						
Microfilm camera	675	990	1,055	1,000	1,125	
Microfilm read-prints.	735	1,540	1,650	1,600	1,750	
Microfilm readers	265	550	575	600	625	
Microfilm Jacket Loader	210	440	460	440	500	
Keypunch	601	826	966	1,008	1,050	
Teletype, ASR	525	1,100	1,150	1,200	1,250	
Electronic Printer	578	1,210	1,265	1,320	1,375	
Visitron CRT terminals	506	1,056	1,108	1,152	1,200	
Repairs and Maintenance	375	780	816	852	880	
SUBTOTAL-Equipment	4,102	8,392	8,983	9,372	9,755	40,604
TOTALS	$47,250	$89,215	$92,820	$96,737	$100,500	$426,522

(KWIC index) for different fields within a component. This facilitates identification of the various terms used by faculty responsible for teaching or guiding students through a given component. It can be used to establish a thesaurus of terms for the faculty and for students.

A key-word-out-of-context (KWOC index) can be generated by BIRS for the modules within a component or among components in BSTEP. This index indicates the number of modules with terms or phrases in common or in isolation. Preliminary trials with the data bank for the clinical component, showed faculty were using terms such as "intern, microteaching, simulation, modeling" to search for modules related to these topics, but the writers of the modules rarely utilized these terms.

Searching and indexing by manual or machine methods is relatively slow and expensive. In the BIRS programs, it was the most time consuming and therefore the most expensive data processing task.

Proficiency in indexing and assigning file terms is an important skill not adequately possessed by all faculty. This problem has been recognized in the literature of information storage and retrieval.[18]

A single faculty member in each component can guide the indexing and assign file terms to modules for a component. A computer generated index can be prepared in which relative weights are given to key terms. The computer generates a maximum number of index terms which reach a minimum level of relevance, and the user specifies the minimum and maximum values to be used. These machine-generated index terms offer greater promise for precise indexing than file terms or descriptors selected independently.

Once the descriptors for a module are selected, they can be stored on magnetic tape or card-punched. Unless the module is revised substantially, the index can continue. Moreover, if a module is removed the isolated index terms for that module or descriptor cards can be discarded. In any event, preparation of an index is expensive, but saving the index reduces the task to one of updating.

A thesaurus of items can be established for each component within BSTEP, to assist faculty and students in understanding competencies, objectives and experiences implicit in the program. The thesaurus helps to reduce semantic differences for faculty and students.

The information system using BIRS can signal a lack of communication and lack of common purpose among faculty writing and implementing BSTEP within the same component.

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[18] John F. Tinker, "Imprecision in Meaning Measured by Inconsistency of Indexing," American Documentation, April, 1966, pp. 96-102.

Machine analysis of modules reveals the commonality or isolation of professors designing modules or attempting to guide students into teaching roles. A thesaurus helps professors and students recognize and establish common language for communication about experiences within the BSTEP component, without violating professors' privileged and unique interpretation of the professional experience.

Chapter 11

EVALUATION AND BENEFIT/COST ANALYSIS

Introduction

Development of the Clinical Behavior Style is a process which underlies the whole of BSTEP. Explicitly, the process is performance-based. Objectives of the program--at the module, component, and program area levels--are stated in terms of performance capabilities. Achievement of the specified performance capabilities by BSTEP students can be measured. Indeed, unless achievement is continually and systematically measured, attainment of the program's objectives will remain in doubt.

The process of BSTEP evaluation is therefore designed to respond to the primary questions: Are the objectives of the program being attained? Is the program effective in producing the desired performance capabilities, which in synthesis produce the Clinical Behavior Style on the part of BSTEP students?[1]

Responses to these questions must be operationally oriented. If certain program objectives are not being attained, the evaluative process must lead to identification and explanation of the probable reasons for non-attainment and, subsequently, to the design of likely corrective actions. If certain elements of the program do not satisfactorily yield the desired performance capabilities, the evaluative process must provide information on the probable causes for this, and suggest likely remedial measures. Following the institution of corrective actions and remedial measures, the process of evaluation must yield operationally useful information on the effectiveness of the program corrections and remedies.

The program cost-analysis system is primarily designed to facilitate efficient allocation and utilization of the resources--human and material--employed in BSTEP. In the course of program development, alternative and successive strategies to achieve the program's objectives will be designed, tested, implemented and evaluated. Each strategy will involve a unique allocation and utilization of program resources. A correspondingly unique set of costs will therefore be attached to each strategy.

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[1] Explicit descriptions of the research designs and procedures required for the Evaluation System are spelled out in a Position Paper developed as part of this project by Clessen Martin, Research Professor of Elementary and Special Education, et al., BSTEP Evaluative Design.

The evaluative process will produce information on the effectiveness of each strategy, as well as the comparative effectiveness of alternative and successive strategies. The cost-analysis system will yield corresponding information on the cost of each strategy, and thus on the comparative costs of program strategies. The information produced in the evaluative process, combined with that produced by the cost-analysis, forms the basis for BSTEP benefit/cost analysis. The essential purpose of the benefit/cost analysis is to identify the most efficient strategies for achieving the program's objectives, i.e., the benefits of BSTEP.

While providing useful information, the benefit/cost system is not a primary component in program development. The basic system described herein has been developed over several years by teams of researchers in the College of Engineering and Office of Institutional Research. Their efforts were directed at a University model; with BSTEP modifications designed for a specific program directed by several colleges. The benefits derived from the benefit/cost system may not be commensurate with the costs in human and materials resources to develop the specific data input devices and to update the information required from the staff during program development. This moot question has not yet been answered to our staff's satisfaction.

In previous chapters, evaluative criteria have been spelled out for particular portions of the program. A major section of the initial BSTEP report was devoted to the process and organization of evaluation. In the first part of this chapter, previous discussions of program evaluation are summarized. In the second part, the cost-analysis system is described. The combination of evaluation and cost-analysis--the basis for benefit/cost analyses of the program--is discussed in the third part, along with the technical features and interrelatedness of the evaluative process and cost-analysis system.

The Process of Evaluation

Scope of the Process

BSTEP is an experimental effort to develop effective techniques for educating teachers proficient in the clinical practice of behavioral science. The BSTEP evaluative process encompasses:

1. Measurement and analysis of the effectiveness of the educational techniques employed in the program

2. Identification and description, in operational terms, of the correlates of program effectiveness and ineffectiveness

3. Following the development of program corrective actions by the Program Development Teams, evaluation of program corrections and remedies

The process is thus continuous and iterative. The product of evaluation is systematic improvement of the program.

Criteria and Measures of Program Effectiveness

The primary criterion of program effectiveness is proficiency, on the part of BSTEP students, in clinical behavioral performance. In operational terms, the criterion is the acquisition of a specified set of performance capabilities which, as a set, constitute the Clinical Behavior Style. Proficiency in the performance of each of the capabilities can be measured and, thus, acquisition of the Clinical Behavior Style can be ascertained. Performance capabilities are specified at three levels of the program: the module, the component, and the program area. The evaluative process at each level is discussed in later sections of this chapter.

Each BSTEP student proceeds at his own, unique rate through the program. One measure of program effectiveness therefore becomes the length of time required for a student to achieve a specified performance capability. Early and late achievers of a specified performance capability could be singled out in the process of evaluation for study of the possible reasons for differences in their achievement rates.

The process of evaluation must take into account differences in student characteristics, instructional modes and other factors relevant in determining program effectiveness. In addition the evaluation design must account for the process by which students are assigned to --or elect--the BSTEP program. If students are not randomly assigned to the program, those who do participate in BSTEP must be studied carefully to determine their similarities and differences with respect to students not enrolled in BSTEP.

Another major question in evaluation involves the need to assess student performance capabilities prior to their beginning the BSTEP program. Pre-testing of capabilities not only enables a better selection of the appropriate entry point for students' involvement in BSTEP, but it also makes possible a more precise estimate of the increment in performance attributable to the program--at the module, component, or program level.

Development of the Evaluation Process

Program development typically will include the following sequence of events: prototype design, testing and redevelopment. This occurs at the module, component and program level, with performance goals set for each level; component and program goals synthesizing goals that are found at lower program levels into broader and higher order objectives. For example, during the pre-implementation period, program components containing varying numbers of modules will be developed to a prototype design stage. During the first year of implementation, some components, identified in Chapter 1, will be tested for effectiveness with the first group of 100 BSTEP students, and redeveloped on the basis of the test results. Other components will be initially tested with BSTEP or non-BSTEP students during the second Implementation Year. All components will be subjected to at least two more cycles of evaluation and refinement during the four years of initial development.

Development of the evaluative process will follow a similar sequence of events, including giving attention to the assessment of the more encompassing goals found at the component and program level. A component's initial design will include an operational statement of its objectives in terms of specific performance capabilities. Initial design will also include a statement of procedures for determining if the component's specified performance capabilities have been achieved. After delivery of the component to a group of students, their achievement of the specified capabilities will be tested employing the originally stated procedures.

Two elements are therefore involved in the evaluation of the initial component design:

1. Evaluation of the content and educational techniques of the component design, in terms of effectiveness

2. Evaluation of the evaluative procedures, in terms of their operational usefulness

In particular, the original statement of the component's objectives will be evaluated to determine if the statement provided an adequate basis for testing the specified performance capabilities.

Based on the results of the two-fold evaluation, the revised component design may include a revised operational statement of the component's objectives, as well as a revised statement of procedures for testing achievement of the specified performance capabilities.

After delivery of the revised component to a second student group, the statements of objectives and testing procedures will again be evaluated. The statements will be evaluated each time they are revised in subsequent versions of the component design. In this way the development of evaluative techniques in BSTEP is also a continuous and iterative process. The product of the process is systematic improvement of both the program elements and the evaluative techniques employed in the program.

A Third Dimension of Evaluation

In the preceding section, two aspects of evaluation were described. They were a) the procedure for evaluating program effectiveness (at any level), and b) the procedure for evaluating the actual evaluative techniques being utilized. A third dimension of evaluation involves the systematic review of program objectives from a more holistic point of view. The principal questions to be asked from this point of view include:

> Do the objectives at each level of program organization--the module, the component and the program area--contribute to the behavioral science paradigm?
>
> Do the objectives at each level contribute to the achievement of objectives at the next higher level?
>
> Are the objectives at each level necessary and sufficient for the preparation of teachers?
>
> Are the program's objectives contributing to the preparation of teachers for the future, as well as the present?
>
> Do the program's objectives contribute to attainment of the Clinical Behavior Style?

The validity of general program objectives is to be periodically reviewed and assessed by persons within and outside the profession. BSTEP staff, representatives of the Clinic School Network, students, and distinguished educators would consider the general program objectives from the professional viewpoint, and would assess component and modular objectives as they contribute to the achievement of general program objectives. A second consultant group, composed of persons representing the cultural, industrial, scientific and spiritual communities would appraise the program from their respective vantage points. A third group is a panel of persons who would analyze and project alternate futures. This panel, described in detail in Chapter 6, considers the future relevancy of programs for helping students meet the changing needs of an evolving society.

Evaluation at Specific Levels of Program Organization

The primary level of evaluation is the module. Each module is designed to develop a specified performance capability on the part of BSTEP students. A module consists of a single experience . During the developmental period of the program, an effort will be made to design three alternative experiences for each module. Each of the three experiences would be designed to develop the performance capability specified for the module. Careful attention would be given to specifying the criteria along which the experiential versions differ, in order to develop useful generalizations for the design of other modules. Each student could initially choose one of the three experiences within the module. Upon completion of a chosen experience, a student would be tested to determine if he has achieved the required performance capability. The comparative effectiveness of alternative experiences within a module can then be evaluated.

As previously stated, one indication of comparative effectiveness can be derived by comparing the time required to complete each of the three experiences and achieve the performance objective of the module. If one of the experiences were found to produce significantly more rapid achievement of the modular objective, the probable reasons for the difference would be sought. The search might encompass:

1. A study of the characteristics of students to determine if the students who selected the experience which led to more rapid achievement were significantly different than the students who selected the other two experiences in the module

2. A study of the reasons students selected one particular experience over the others available at the time the decision was made

3. A comparative examination of the educational techniques employed in delivering each of three experiences, along such criteria as instructional mode, faculty contact, etc.

4. A comparative study of the Clinical Behavior Style of the faculty members responsible for delivery of each of the experiences

5. A comparative analysis of the relevancy of the content of each experience to the performance objective of the module

6. A study of the procedures employed to test for performance proficiency to determine its relevance and adequacy for each of the experiences

Based on the results of the comparative evaluation of the three experiences, the two relatively less effective experiences could be redesigned for inclusion in a second design of the module, which would be presented to a subsequent group of BSTEP students. Evaluation of the second design would again include a comparison of the effectiveness of all three experiences. It would also include a comparison of the effectiveness of the first and second versions of each redesigned experience. The evaluative process at the modular level is therefore designed to compare the effectiveness of alternative strategies of achieving the module's objectives, as well as the effectiveness of successive strategies.

Comparison of successive versions of an experience would be based initially on the percent of students achieving the specified performance capability within a given time period, in each version of the module. Again, the time factor would be treated as one preliminary indicator of modular effectiveness. In the search for explanation of differences, possible differences in student characteristics, in modes of instruction, in the style of instructors, in the relevancy of content and in the testing procedures would be considered. Modular designs would also be analyzed to determine if their statements of objectives are operationally meaningful. Finally, modular objectives would be reviewed from a substantive view-point as described above in the description of the third dimension of evaluation.

Currently, approximately 2,700 modules have been developed. When in operation, BSTEP may contain several times as many modules. Thorough, multi-dimensional evaluation of all modules will be a practical impossibility; sampling of modules for intensive study may be necessary depending on such factors as budget constraints of the program. The procedures which will be employed to select modules for intensive evaluation are described in the Position Paper supporting this part of the chapter.[2]

The second level of evaluation is the component. BSTEP components are unified sets of modules. Component objectives are a specified set of performance capabilities, broader in scope than the objectives of individual modules. Students may select particular subsets of modules within a component on the basis of program specialization needs and the counsel of faculty. Each of the modular sub-sets is designed to lead to accomplishment of the set of performance capabilities specified for the component.

The development of components therefore parallels that of modules. In the latter case, a student may select one of several experiences designed to achieve a modular objective. In the case of components a student may select one of several sub-sets of modules designed to produce the performance capabilities specified for the component in question. The process of evaluation at the component level also parallels the process at the modular level. Component-level evaluation will thus focus on:

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[2] Ibid.

1. The effectiveness of individual modular sub-sets in achieving the component's objectives

2. The comparative effectiveness of the alternative modular sub-sets within the component

3. The comparative effectiveness of successive component designs

An important additional problem of evaluation is also introduced at the component level: the problem of modular sequence. In certain components, the sequence of modules within the modular sub-sets of the component may have a necessary logical order. This will typically be the case in mathematical and statistical components, for example. In other components the sequence of modules within sub-sets will have varying degrees of flexibility, the highest degree being complete randomness. In flexible and random-sequence components the actual sequence followed by individual students could be an important determinant of component effectiveness. It will therefore be important to record actual sequences followed in order to evaluate the potential effect of different sequences.

Component level evaluation will also encompass review of the evaluative techniques included in component design. The primary purpose of the review will be to determine if component objectives and testing procedures are stated in operationally meaningful terms. The component pre- and post-tests would be assessed to determine their validity and reliability. The third dimension of component evaluation involves the review of component objectives from a substantive viewpoint. The nature of the substantive review has been described in preceding paragraphs.

The third level of evaluation is the program area. There are five BSTEP program areas: General-Liberal, Human Learning, Scholarly Modes of Knowledge, Professional Use of Knowledge, and Clinical Experiences. Each program area consists of a unified set of components. Within each area, students may select component sub-sets in accordance with program requirements, individual needs, and faculty counsel. Each component sub-set is designed to develop the performance capabilities specified for the program area as a whole. Third-level evaluation will therefore somewhat resemble the evaluative processes previously described for the module and component levels.

At the module and component levels, students attain the required performance standards prior to moving to another module or component. The time period for completing them is relatively short--measured in minutes, hours or a few months. Program areas, however, permeate the total undergraduate endeavor. Thus, while many students may complete two areas (Scholarly Modes of Knowledge and General-Liberal Education) prior to internship, the five program areas actually cannot be evaluated in their impact until the end of the program.

In summary, BSTEP evaluation will be conducted at three levels of program organization: the module, the component and the program area. The central thrust of evaluation at each level will be to determine program effectiveness, i.e., achievement of proficiency in the performance capabilities to be attained at each level of the program. Evaluative techniques will also be evaluated for operational meaningfulness. Finally, program objectives at each level will be reviewed from substantive vantage points.

Evaluation During Internship

Internship is the culmination of a student's BSTEP career. During internship the student has full responsibility for an elementary school class. He is closely supervised by an intern consultant and has the support of the university-school Clinic-School Network. Each of the modules, components and non-BSTEP university courses of the student's academic career are known. The environment of the internship--the policies and practices of the elementary school, the characteristics of the pupils, etc.--could also be described. The student's own personal characteristics will have been assessed to the extent of present testing capabilities. Internship thus provides a logical opportunity to assess the benefits of the over-all program, i.e., the achievement of over-all BSTEP objectives within relatively well-defined parameters.

Data collection procedures could include observation of interns in their classrooms, interviews with them relative to their problems and concerns, and intern assessment of their own preparation program. While the evaluation team, program developers and others may be directly involved in the data collection phase, a major contributor to the process would be the intern consultant. His close contact with a relatively few interns (five or six) over an entire academic year provides potential for gaining insights into program effectiveness not previously possible. This process assumes an effective in-service education program for consultants, a process described in Chapter 7.

Another illustrative approach to evaluation during internship involves student/intern assessment of program effectiveness. Students could be asked during pre-internship to evaluate program effectiveness. Their assessments would be recorded upon completion of each component. The basis of assessment would be the contribution, perceived by the student, which each element of the program made to his development of clinical behavior style and performance capabilities. The record of a student's assessments would be stored in the IR system and recalled near the end of his internship. Against the background of his experience as an intern, he would then be interviewed to determine whether his original assessments of program effectiveness has changed.

A broad range of insight into over-all program effectiveness could be obtained in this manner. Program elements whose original appraisal shifted considerably could be singled out for special analysis. Program elements given low ratings both by pre-interns and interns, but which were felt important to the program, might be studied to determine ways to improve their acceptance.

In addition, a variety of useful analyses could be undertaken to relate student/intern assessments and changes in assessments to particular factors of effectiveness, such as pre-internship program composition, sequencing, achievement rates, student characteristics, instructional modes, pupil characteristics and internship environments. Comparisons could also be made between student/intern assessments and the evaluations of intern styles and performance capabilities by intern consultants.

In recording and reviewing student assessments it would of course be necessary to gain insight into the reasons perceived by students for assigning particular ratings. While in-depth insight into the reasons perceived could not feasibly be obtained for all student assessments, highly positive and highly negative assessments would be prime candidates for thorough investigation.

Inter-Program Evaluation

The preceding discussion of the evaluative process has focussed on intra-program evaluation. Another important aspect of evaluation would be to compare the benefits of BSTEP with other programs of teacher education. For example, evaluative techniques could be employed to compare BSTEP with existing programs of elementary teacher education at MSU. Since only part of the total population of elementary education majors will participate in BSTEP during the initial period of program development, the remainder of the population could provide the source of comparison groups.

The principal problem of inter-program comparison, however, involves a dissimilarity of objectives. The non-BSTEP program undoubtedly will not contain objectives defined in operational terms with the same intensity of effort as those in BSTEP. In addition, the non-BSTEP objectives may not be comparable to those of BSTEP, even if operationalized. Comparison of the two programs must therefore be undertaken with extreme caution. The non-BSTEP program could be analyzed to determine at which points its students might be expected to have developed performance capabilities comparable to those which BSTEP students will have acquired. The component level of performance capability would probably offer the first feasible level of comparison, although, prima facie, not all BSTEP components will be suitable for inter-program comparisons. The control groups must also be selected to ensure as much comparability as possible in relation to BSTEP student characteristics.

Summary

The general approach to evaluation has been briefly described. More explicit descriptions are found in other chapters in this report and in Section IX of the Phase I report. In the organization of BSTEP, one of the service subsystems is Evaluation and Research. This subsystem has two basic duties: 1) to assist program design teams in developing valid and reliable measures of module and component objectives, and 2) to assess the effectiveness of program elements.

The latter responsibility would be discharged through a series of studies. The specific design of the evaluation system, and illustrative program-effectiveness studies are described in a Position Paper accompanying this report. For a more complete discussion, see Clessen Martin, et al., BSTEP Evaluative Design.

BSTEP Cost Analysis

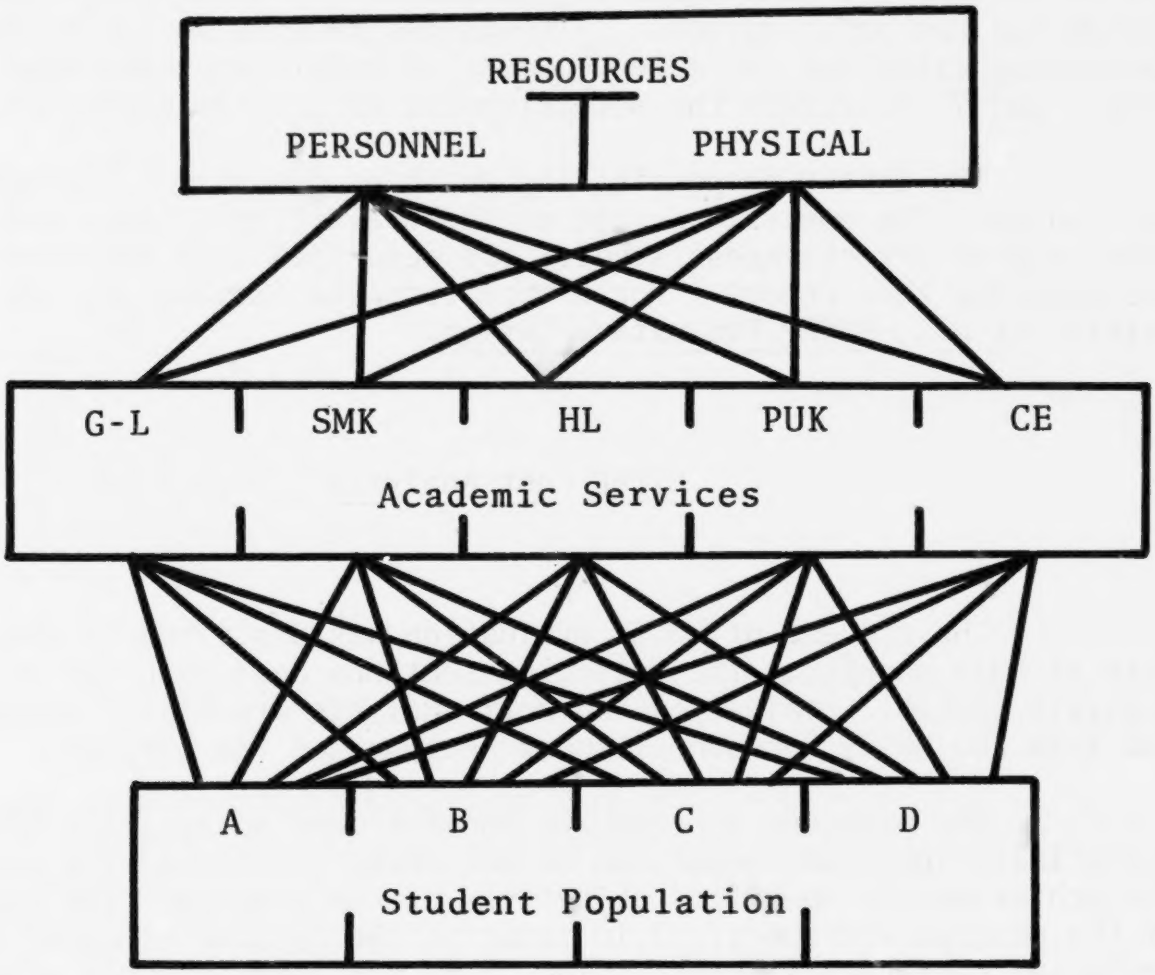
The process of BSTEP evaluation was described in the preceding part of this chapter. The following sections deal with the BSTEP cost analysis system. Evaluation and cost analysis are highly inter-related and form the basis for benefit/cost analyses of the program.

The proposed approach to benefit/cost analysis in BSTEP essentially involves comparison of the costs of alternative strategies for achieving the specified objectives of the program. The objectives of the program are specified in terms of the desired clinical behavior style and performance capabilities to be achieved by BSTEP students. These style and performance capabilities are defined as the benefits of BSTEP. The costs of the program are the costs of producing students with the desired capabilities.

Program costs will vary according to program strategies employed in achieving BSTEP objectives. Different mixes of modules and components, changes in the content and sequence of program elements and differences in instructional modes imply differences in strategies for achieving the objectives of the program. With each such variation in strategy is associated a variation in program costs. The basic purpose of the proposed benefit/cost procedures is to measure cost differences resulting from actual or hypothetical changes in program strategy so as to approximate over time the lowest possible total cost of achieving the program's over-all objectives.

The Conceptual Framework

Presented below is a simplified diagrammatic representation of the BSTEP cost analysis system:


RESOURCES
PERSONNEL
PHYSICAL
G-L
SMK
HL
PUK
CE
Academic Services
A
B
C
D
Student Population

In the diagram, the student population is viewed as generating demand for the academic services provided in BSTEP. The services are produced by combining personnel with physical resources.

Academic Services. The academic services of BSTEP could initially be divided into categories corresponding to the five program areas:

General-Liberal Education

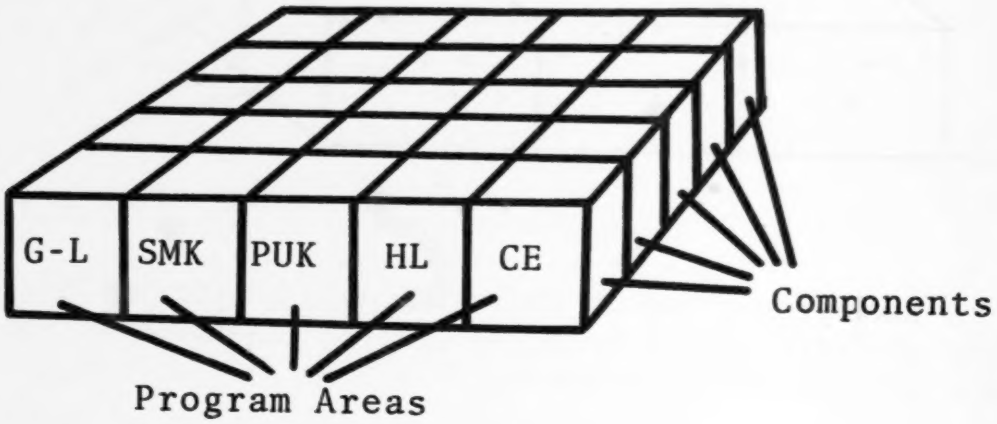
Scholarly Modes of Knowledge

Human Learning

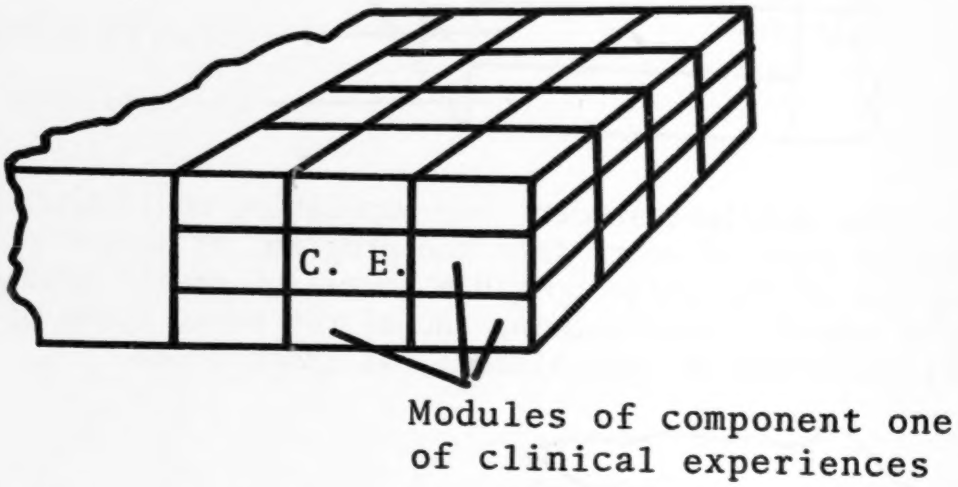
Professional Use of Knowledge

Clinical Experiences

Each of the above categories could then be divided into its respective program components, thus making the academic services sector three-dimensional, as shown schematically below:



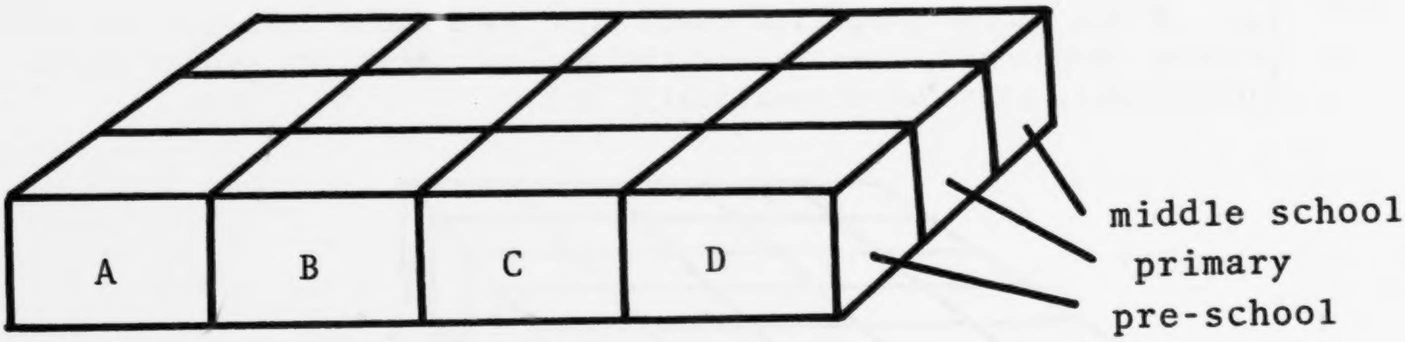
Each component could be divided into its respective modules, as schematically illustrated below:



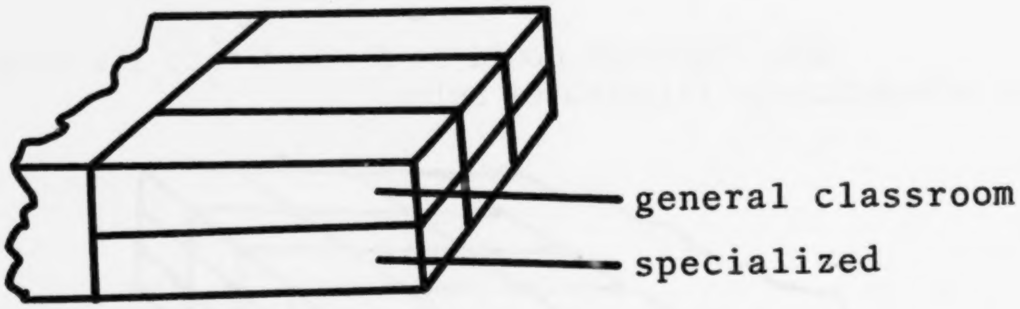
The smallest unit of academic service would thus be an individual module.

Student Population. Similarly, the student population sector could initially be divided into four groups; the group entering BSTEP in its first year of operation, Group A; the group entering in the second year, Group B; in the third year, Group C; and in the fourth, Group D.

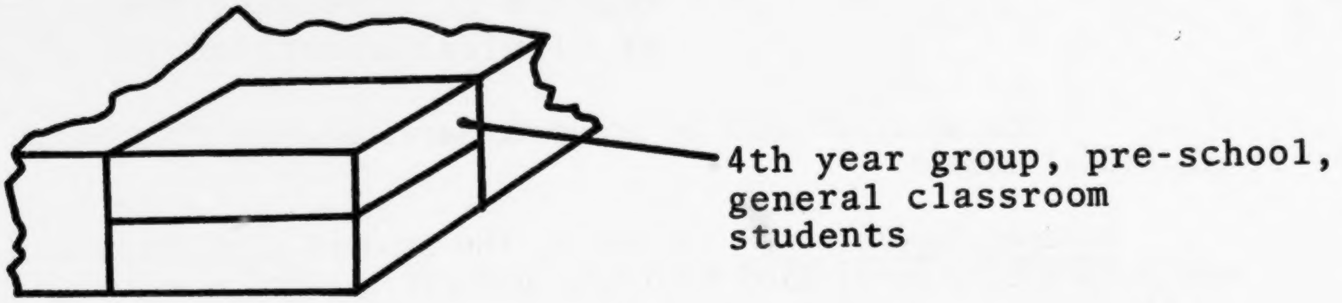
Students in each year-group could be divided into three categories in accordance with their career preferences for teaching pre-school, primary or middle school pupils. The student population sector thus would also become three-dimensional, as shown:


A
B
C
D
middle school
primary
pre-school

Each year-group of students could be further divided according to career preferences for becoming general classroom or specialized teachers, as illustrated below:


general classroom
specialized

The smallest student sub-population would thus be defined by a particular year of entry into the program; by career preferences for teaching one of the three possible levels of pupils (pre-school, primary or middle school); and becoming one of two basic types of teachers (general classroom or specialized), as shown below.


4th year group, pre-school, general classroom students

Resources. The resources required to produce the academic services of the BSTEP could conceptually be divided into two broad categories: personnel and physical.

Personnel. The personnel required for the BSTEP could initially be categorized into the following basic types:

Teaching Professors (TP)

Teaching Assistants (TA)

Clinic-School Teachers (CST)

Intern Consultants (IC)

Administrators (A)

Clerical and Administrative Staff (CAS) and

Technical Support Staff (TSS)

Each of the above categories could be re-divided by rank and salary classification. Similar categories and sub-categories are definable for each basic type of personnel resource involved in the production of BSTEP services.

> Physical. Space, equipment and materials are the principal categories of physical resources required for BSTEP. Sub-categories are established for each category. Space, for example, can be broken down into lecture hall space, general classroom space, seminar room space, individual carrels, laboratory space, et cetera. Equipment includes all hardware used in BSTEP ranging from teaching machines to closed circuit television cameras. Materials are the diverse softwares, such as programmed texts, books, charts, and video tapes.

The Mechanics of the Cost Analysis System

Overview. As previously stated, the BSTEP student population is viewed for conceptual purposes as generating demand for the academic services provided in the program. Personnel and physical resources are combined to produce the services demanded by the student population. The basic operational purpose of the cost analysis system is thus to describe the quantity of each type of resource, by category and subcategory, for both personnel and physical resources, required to produce each of the units of academic service demanded by the student population. By imputing prices to each unit of resource utilized in the production of a unit of academic service, the cost of supplying that unit of service becomes known.[3] In this sense, the BSTEP cost analysis system is essentially equivalent to a program planning and budgeting system.

Demand for Academic Services. As previously described, the BSTEP student population is categorized by year of entry and by career preferences. Each student sub-population (defined by a specific year and particular career preferences) could be presumed to demand a particular set of program components; each of the components in the set will have a particular sub-set of modules. The particular set of components constitute a demand vector. Associated with each sub-population of students would be a unique demand vector.

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[3] A preliminary costing of various personnel and physical resource units has been completed, with an estimated "inflation index" for the years 1970-1975, and has been published separately as a Position Paper supporting this project report. (Olaf Isachsen, Guidelines for BSTEP Program Budgeting).

The actual composition of the demand vector of each student sub-population would be determined by the interaction of:

Administrative policy

The judgment of teaching professors

Student preferences

Student performance

In other words, administrative policy-makers[4] will establish basic requirements in terms of the set of components which must be satisfactorily completed by each student sub-population. Within each component, the teaching professor will have bounded discretion to determine basic modular requirements which must be satisfactorily completed by each student sub-population. Each student sub-population will have discretion bounded by administrative policy, a) to select a certain number (and sequencing) of non-BSTEP courses from the University offerings, on the basis of personal and professional interests, and b) through consultation with BSTEP teaching professors and his advisor, to select particular sub-sets of modules within components, which are best suited to personal and professional interests. The performance of students will also be a determinant of the mix of modules finally delivered to students within a component.

At the outset of the first year of BSTEP, the vectors of student sub-population demand for the academic services of the program would be recorded at the BSTEP component and university-course level at the time of registration. The sub-sets of modules within BSTEP components actually delivered to student sub-populations would be recorded upon satisfactory completion of individual components. Thus, at the end of the first year, a complete record would exist of demand vectors of all student sub-populations.

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[4] Administrative policy-makers, as used here, refers to many persons, laws, regulations, and policies which combine together to determine requirements for the prospective teacher. These include university minimum requirements for graduation, state requirements for provisional certification, faculty determinants of basic program parameters, etc.

As subsequent entering group records are accumulated, it may be possible to develop a probabilistic forecast of the demand vectors of each new group of entering students. In other words, it could be possible to predict the likely vectors of academic services which will need to be supplied to students in their first year in the program. This capability would provide the basis of short-term program budget planning.

Similarly, the accumulation of records on demand vectors of successive student groups during their second, third and fourth years in the program would facilitate medium-term budget planning for all years of the program.

The BSTEP information retrieval system will store records on the personal characteristics of all BSTEP students. To enhance the usefulness and predictive power of the cost analysis system, research could be undertaken to determine if there are significant correlations between student characteristics and the demand vectors of students. If such correlations could be found, it might then be possible to predict the demand vectors of entering BSTEP students for successively longer periods of time.

To illustrate, suppose it were found that the total undergraduate program demand vectors of the first graduating group of BSTEP students are significantly correlated with individual or sub-population student characteristics. It might then be possible to estimate probable four-year demand vectors of each entering group on the basis of individual or sub-population characteristics ascertained at the time of entrance.

Such analyses, in addition to extending the concept and possibly improving the accuracy of budget forecasting, could lay the basis for policy-change simulations. One policy in question would center on student selection.

If, for example, consideration were being given to a change in student selection policy which would discriminate in favor of identifiable student characteristics, the consequences of such a policy change in terms of the probable undergraduate program demand vectors for academic services could be simulated.

Similarly, policy-change simulations could be constructed for policies dealing with: a) the set of components which must be completed by each student sub-population; b) the range of student choice regarding the selection of non-BSTEP university courses; c) the basic requirements for modular composition of individual components; d) the range of student choice regarding the selection of sub-sets of modules within particular components; and e) policies regarding recycling and the prescription of remedial modules on the basis of student performance. Each such change in policy would reshape the demand vectors of the student population. The cost analysis system would facilitate determination of the probable consequences of such changes in terms of the mix and quantity of academic services to be provided in BSTEP.

In summary, the demand for academic services generated by the student population would be recorded for each year of the program. These records could form the basis for short and medium-range budget forecasting, and also for the simulation of policy changes involving student selection and academic policies.

The Production of Academic Services. The academic services of the BSTEP are categorized by program area, components and modules. Student sub-population demand vectors specify particular groups of components within program areas.

The basic unit of academic service, from the cost analysis viewpoint, would be a component, i.e., a particular set of modules. Units of academic service are produced by a combination of personnel and physical resources. The cost analysis system describes the quantities of each type of resource required to supply a unit (component) of each academic service. For example, it may include one-half man-month of full professor time; one-fourth man-month of learning center clerk time; three hours of equipment technician time; 20 one-hour units per week of simulation laboratory time; 60 one-hour units per week for eight weeks of carrel time, and 1 hour per week for seven weeks of general classroom space (of a certain size) to produce 20 units of modular sub-set A of component X. These twenty units of academic service would be consumed by 20 BSTEP students who constitute a particular student sub-population defined by a common year-level in the BSTEP and their similar preferences regarding the age groups they will eventually teach and the kind of teaching they will engage in (general classroom or specialized).

The cost analysis system would describe as precisely as possible the units of each type of resource utilized in the production of each unit of academic service. Units of each resource type multiplied by their respective imputed prices would yield the cost of producing each unit of academic service.

As previously stated, a unit of BSTEP academic service, from a cost analysis viewpoint, would be a sub-set of modules within a component. By aggregating all modular sub-set costs within a component, the total component cost could be derived. By aggregating all component costs within a program area (e.g., Human Learning) the total cost of the program area could be derived. The costs of all program areas would sum to the total cost of BSTEP.

In the first instance, therefore, the cost analysis system would describe the actual costs of supplying each unit and all units of academic service delivered to each and all student sub-populations of BSTEP. The categorization and sub-categorization of the student population, services and resources sectors would permit a broad variety of program cost breakdowns. These include:

> Breakdowns of cost by student sub-population, i.e., first, second, third or fourth-year groups; general classroom or specilized; pre-school, elementary or middle school;
>
> Breakdowns by program areas and by components;
>
> Breakdowns by type, category and sub-category both of personnel and physical resources.

Given the flexibility of this type of cost analysis system, simulations could also be constructed of a variety of program policies involving the production of BSTEP academic services. For example, the range of academic services to be offered to BSTEP students is a program policy decision. The cost analysis system could be utilized to simulate the consequences of changes in this policy (possible additions, deletions or modifications of components or modular subsets) in terms of changes in resource requirements and costs.

The proportions in which resources are combined and the kinds of resources which are utilized to produce a given unit of academic service are another matter of program policy. To illustrate: the utilization of three man-months of a graduate assistant and three months of a general classroom space to produce 20 units of an academic service is a policy decision, be it explicit or implicit. The cost analysis system is designed to simulate the cost consequences of a possible policy decision to utilize 3 man-months of an associate professor, 3 months of a teaching machine, 1 1/2 months of a classroom space and 1 1/2 months of 20-man carrel space to produce the same number of units of the same academic service. The above example involves changes in the types and amounts of resources utilized; the proportions in which resources are combined; and the teaching technology employed. This complexity of change will undoubtedly not be uncommon in the course of BSTEP experimentation and development. The capability to analyze in advance the potential cost consequences of alternative policy changes of this nature could therefore be critical to successful program implementation.

The system would also provide the capability to analyze the program cost consequences of changes in the prices of resources utilized in the program. Anticipated changes in personnel salaries and wages could be readily analyzed, for instance. More importantly, the cost analysis system would facilitate study of the economic feasibility of a) eventually extending BSTEP to encompass all elementary teacher training activities at MSU, and b) installing BSTEP in other university settings which have different resource cost structures. The latter capability feature will substantially enhance the transferability of BSTEP to other campuses.

BSTEP Benefit/Cost Analysis

Mechanics of Benefit/Cost Analysis

The purpose of this part of the chapter is to explain BSTEP benefit/cost analysis. Preceding sections have described the evaluative process and the cost analysis system. Evaluation is the process of determining if the program is achieving its stated objectives, i.e., the benefits of BSTEP. Program objectives are operational statements of performance capabilities, at each level of program organization, which together constitute the Clinical Behavior Style. The cost analysis system describes the costs of achieving BSTEP objectives at various levels of program organization, beginning with the component. Costs of achieving program objectives employing alternative and successive strategies can be compared in the cost analysis system. BSTEP benefit/cost analysis is essentially therefore the analysis of comparative costs, under alternative and successive strategies, of achieving BSTEP benefits, i.e., program objectives, in synthesis, the Clinical Behavior Style.

To illustrate: suppose component X is designed to achieve a specified set of objectives in terms of the clinic behavior performance capabilities of sub-population S-P of BSTEP students. Upon completion of the component, it is evaluated for effectiveness. Based on the results of the evaluation, the component is redesigned. Some new modules are added. Several of the original modules are deleted or modified. A decision is made to shift to the use of teaching machines for some modules. The restructured component is subsequently administered to a successive student sub-population and reevaluated upon completion.

In the cost analysis system, the resources required and cost of delivering the original component to the first student population would be recorded. When the decision to restructure the component was being contemplated, the cost analysis system could be employed to simulate the cost of delivering the restructured component. Upon completion of the restructured component by the second student sub-population, the actual cost of delivering the component to the second student sub-population would be recorded.

If both the first and second versions of the component were found to be equally effective in achieving the objectives of the component; and if both versions allowed students to achieve the stated objectives in the same time period; then, a decision about the preferred version could be made primarily through a comparison of delivered costs.

If, on the other hand, one version were more efficient than the other in terms of reducing the average time required for completion, then the decision about the preferred version could be made by analyzing the trade-off between student time and delivered costs. (The more costly version might be preferred if significantly more efficient in terms of average time required for completion).

The most complicated decision would present itself when differences in costs, time efficiency and effectiveness in achieving component objectives were all registered (except, of course, in the case when one version were at the same time less costly, more efficient and more effective). Criteria (and their ranking) for determining trade-offs among costs, time efficiency and effectiveness could be determined when actual budgetary and time constraints are established.

The preceeding example is presented primarily to illustrate how the mechanics of benefit/cost analysis would operate at the level of a component. Given the dynamics of BSTEP it is practically certain that numerous components will be undergoing modification during any time period of program implementation. It is therefore of critical importance that the cost analysis system produce information on the aggregate, as well as the individual cost consequences of simultaneous modification of numerous components.

Technical Features of Cost Analysis System

In a preceding part of this chapter the BSTEP cost analysis system was described in conceptual and operational terms. The purpose of the following sections is to describe the technical features of the cost system.

A Mathematical Model of BSTEP. The previously described conceptual framework of the cost analysis system would be translated into a mathematical model. In essence, BSTEP would be modeled as a set of interacting subsystems, or sectors, as shown schematically in the figure on the following page. As was explained in the conceptual presentation of the system, the sectors would be defined along functional lines, rather than administrative divisions. Interactions among the sectors would be characterized by vector flows of services and/or resources. Associated with each vector flow would be a complementary vector of prices representing the corresponding imputed values of each unit of service and resource.

The model would be structured in a state-space form. In particular, the form would be:

$$\underline{\Psi}(t+1) = F\ \overset{\text{system states}}{\underline{\Psi}(t)},\ \overset{\text{parameters}}{\underline{a}(t)},\ \overset{\text{exogenous variables}}{\underline{\beta}(t)},\ \overset{\text{control inputs}}{\underline{\gamma}(t)}$$

$$\underset{\text{response variables}}{\underline{\theta}(t)} = G\ \underline{\Psi}(t),\ \underline{a}(t),\ \underline{\beta}(t),\ \underline{\gamma}(t)$$

for discrete points in time, where:

$\underline{\Psi}(t)$, $\underline{a}(t)$, $\underline{\beta}(t)$ and $\underline{\theta}(t)$ are finite vectors;

$\underline{\Psi}(t)$ *and* $\underline{\Psi}(t+1)$ *are said to represent the* internal state of the system at times t and (t + 1), respectively, and

$\underline{\theta}(t)$ represents the output or response of the system to its state, parameters, and inputs.

In this form the model establishes an accounting system within the structural (functional) framework of BSTEP, and describes the unit cost of inputs and outputs associated with each sector of the program.

Origins of the BSTEP Model. Development of a BSTEP model of the form described above would be based on the results of four years of research undertaken by the Department of Electrical Engineering and Systems Science at MSU. Supported by a grant from the National Science Foundation, the research was aimed at formulation of a mathematical model of the University. A report of the research has been published as *A Systems Model for Management, Planning and Resource Allocation in Institutions of Higher Education*, in 1968, by the Division of Engineering Research at MSU. The BSTEP model would be a version of the University model adapted to the specific structure of BSTEP. The following description of the BSTEP model is therefore presented against the background of the University model.

The University model consists of a set of equations, of the state-space form presented above, which describe the pattern of resource utilization used to satisfy the demands placed upon the University. The University's resources are broadly defined as personnel (academic and non-academic), space, and equipment; the demands

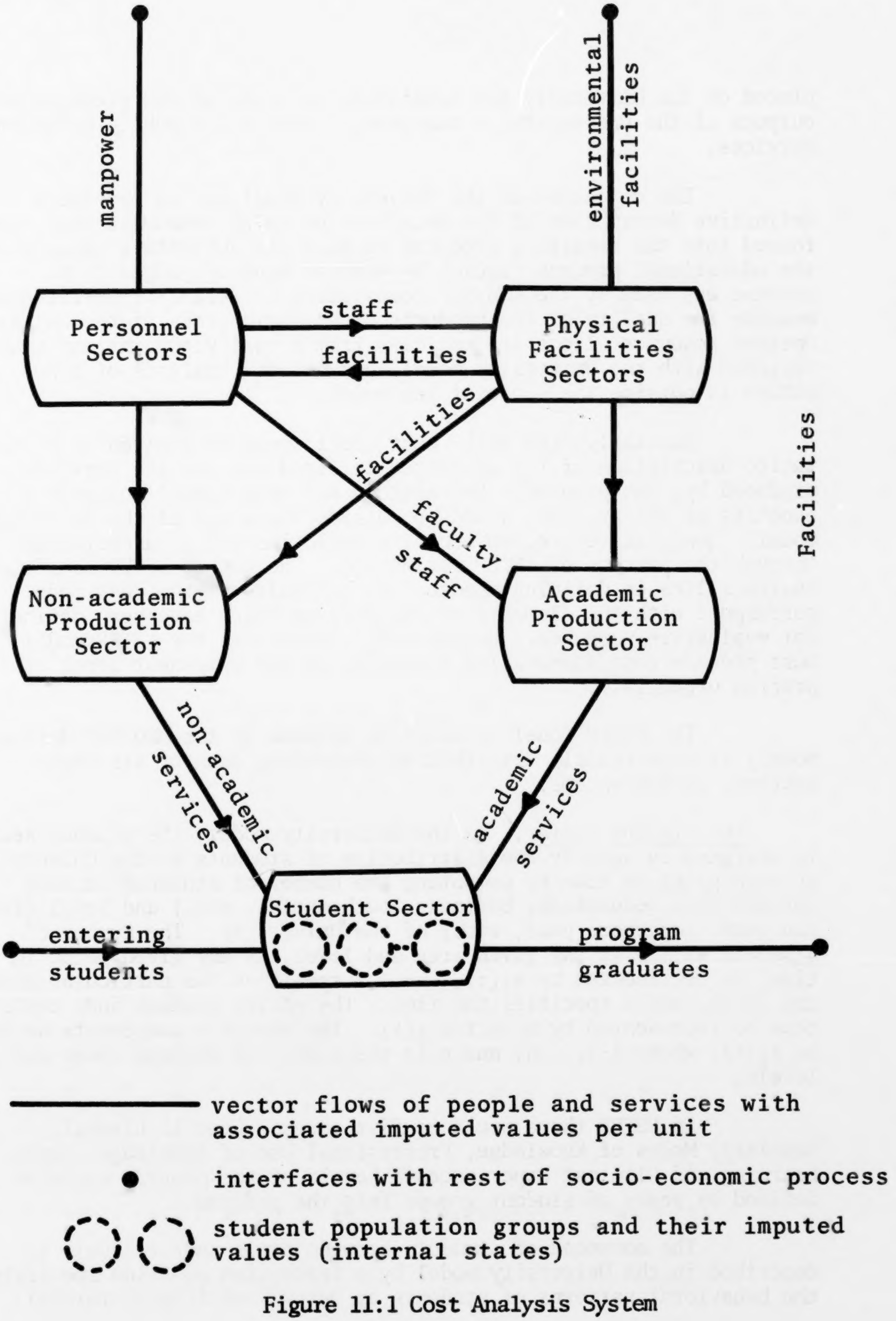
manpower
environmental facilities
Personnel Sectors
staff
facilities
Physical Facilities Sectors
Staff & Faculty
facilities
faculty
staff
Facilities
Non-academic Production Sector
Academic Production Sector
non-academic services
academic services
Student Sector
entering students
program graduates
vector flows of people and services with associated imputed values per unit
interfaces with rest of socio-economic process
student population groups and their imputed values (internal states)

Figure 11:1 Cost Analysis System

placed on the University are identified in terms of the products or outputs of the University -- manpower, research and public or technical services.

The objective of the University model is "to provide a definitive description of the mechanism by which resources are...transformed into the resulting products so that the subjective aspects of the educational process (could) be more accurately judged." No attempt was made by the MSU/NSF researchers to define or operationally measure the quality of the products or academic goals of the University. Optimal resource allocation policies from a cost viewpoint may thus be reviewed with the University model, but benefit analysis of a non-cost nature is outside the scope of the model.

Similarly, the BSTEP cost model would be limited to a quantitative description of the resources utilized in, and the services produced by, the program. Definitions and operational measures of the benefits of the program, would be outside the scope of the BSTEP cost model. Qualitative program benefits would instead be ascertained through the process of BSTEP evaluation. The key to BSTEP benefit/cost analysis lies in defining the sectors and units of the cost model to correspond with the elements of the program which have been defined for evaluative purposes. Essentially, therefore, the BSTEP model must provide cost information beginning at the component level of program organization.

The BSTEP model (a modified version of the MSU/NSF University model) is more readily described by presenting each of its basic sectors, or subsystems.

The Student Sector. In the University model, the student sector is designed to specify the distribution of students in the University at each point in time by computing the number of students in each defined area (education, business, mathematics, etc.) and level (freshman year, sophomore year, etc.) of the University. The number of students in and at any given area and level, at any given point in time, is represented by $s_i(t)$, where i specifies the particular area and level, and t specifies the time. The entire student body could thus be represented by a vector $\underline{s}(t)$. The vector's components would be $s_i(t)$, where i-1,...n, and n is the number of defined areas and levels.

In BSTEP there would be five areas: General-Liberal, Scholarly Modes of Knowledge, Professional Use of Knowledge, Human Learning and Clinical Experiences. Levels of the program would be defined by years of student groups into the program.

The movement of students between areas and/or levels is described in the University model by a transition equation specifying the behavioral patterns of students as determined from historical records. The equation

$$\underline{s}(t) = P(t)\underline{s}(t-1) + \underline{a}(t)n(t) \qquad \text{Eq \#1}$$

states that the number of students in each area-level category during time t, that is, $\underline{s}(t)$, is equal to the product of a transition matrix, $P(t)$, times the student population vector during the last time period, $\underline{s}(t-1)$, plus the number of new students entering the system, $n(t)$, times a vector dispersing those students to the proper area and level, $\underline{a}(t)$.

This equation thus describes the movement pattern of students once inside the system, and the pattern of admissions to the system. An entry in $P(t)$, $P_{ij}(t)$, would describe the percentage of students who were in category j during t-1 (for example, first year-group students in Human Learning), who presently are in category i during t (first year-group students in an advanced stage of Human Learning). An entry in $\underline{a}(t)$, $a_i(t)$, would describe the number of new students directly entering category i during time t.

The basic equation could, of course, be manipulated to describe the mix of students at any future point in time. The equation presented would be

$$\underline{s}(t+m) = \prod_{k=0}^{m} P(t+k)\underline{s}(t-1) + \prod_{k=1}^{m} P(t+k)\ \underline{a}(t)n(t) + \prod_{k=2}^{m} P \qquad \text{Eq \#2}$$

where m equals the number of time frames into the future.

The matrix $P(t)$ and the vector $\underline{a}(t)$ are recognized as representing aggregate student behavior. In BSTEP, entries in $P(t)$ and $\underline{a}(t)$ could arbitrarily be set to values of particular interest in order to describe "ideal" or "planned" student movement through the areas of the program.

In the University model, each student is viewed as placing a demand for course and research credits upon the University. The vectors $\underline{c}(t)$ and $\underline{r}(t)$ are used to describe the vectors of demands for course and research credits respectively for appropriate areas and levels. The definitions of areas and levels for course and research credits are allowed to differ from area and level definitions which are utilized to classify the student population.

In the BSTEP context, the vector $\underline{c}(t)$ could be used to represent the demand for particular components of BSTEP, offered at various levels (to different student year-groups), within the BSTEP program areas. There would thus be no need to restrict any specific program component to a particular student year-group or program area.

Assuming (in the University model) that demands for courses and credits are unconstrained, the credits demanded are directly proportional to the distribution of students in the student vector, $\underline{s}(t)$. The total number of credits required to be produced is therefore described by the equation

$$\begin{bmatrix}\underline{c}(t)\\ \underline{r}(t)\end{bmatrix} = \begin{bmatrix}C\\ R\end{bmatrix} S(t) \qquad \text{Eq \#3}$$

Each entry in the matrices C and R represents the average number of credits of course work and research from all areas and levels which are required by a student in any area and level. An entry C_{ij} would state the average number of credits of course i taken by each student in category (area-level) j. This equation thus summarizes the different demand functions of each defined category of student, to arrive at a total demand figure for a particular course.

In the BSTEP context, a similar equation would be used to arrive at the total demand for a specific program component during time period t, given the numbers of students at each level of the program, and given the different demand functions of those students for the component in question. The demand functions could be specified to reflect a "required" curriculum, or could be derived from historical records to reflect student preferences. BSTEP demand functions would most likely be specified as a combination of a core set of required program elements with program elements selected in accordance with student preferences and faculty counseling.

Production Sectors. The University model specifies two production sectors which generate the course and research credits specified by Equation #3, above: the academic production sector and the non-academic production sector. The schematic diagram of the academic production sector is shown as:

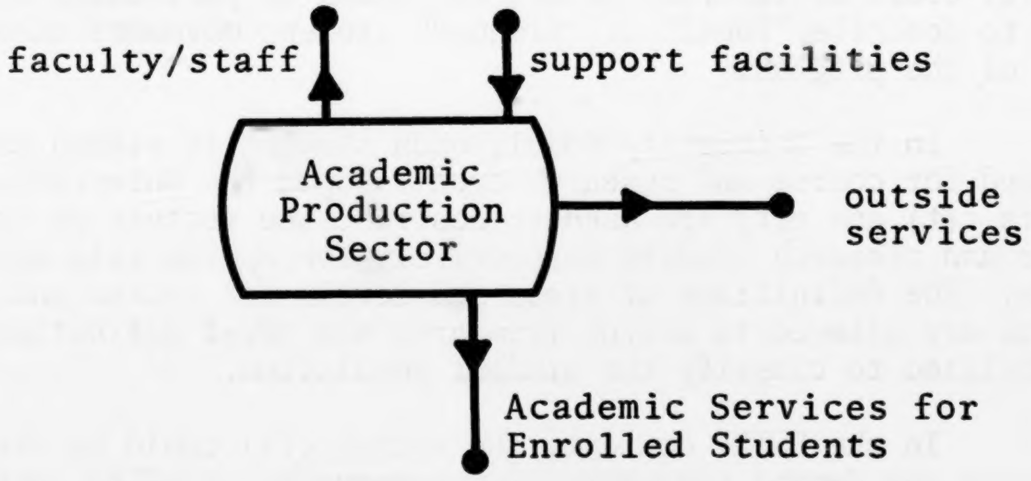
faculty/staff
support facilities
Academic Production Sector
outside services
Academic Services for Enrolled Students

Figure 11:2 Academic Production Sector

The total sector is viewed as a collection of sub-sectors (colleges, departments, etc.), each producing course and research credits for students, and also outside services. In BSTEP, the subsectors of the academic production sector could be the five BSTEP program areas.

The personnel and environmental facilities required to produce the outputs of the academic production sector are described in the University model as

$$\begin{bmatrix} \underline{f}(t) \\ \underline{g}(t) \\ \underline{e}(t) \end{bmatrix} = \begin{bmatrix} F_1 & F_2 & F_3 \\ G_1 & G_2 & G_3 \\ E_1 & E_2 & E_3 \end{bmatrix} \begin{bmatrix} \underline{c}(t) \\ \underline{r}(t) \\ \underline{o}(t) \end{bmatrix} \qquad \text{Eq \# 4}$$

The input vectors $[\underline{f}(t), \underline{g}(t), \underline{e}(t)]$ are shown as functions of the output vectors $[\underline{c}(t), \underline{r}(t), \underline{o}(t)]$. Both $\underline{c}(t)$ and $\underline{r}(t)$ were discussed above and are functionally related to the number and distribution of students; $\underline{o}(t)$ is the demand for outside services.

The vector $\underline{f}(t)$ describes the number of full-time equivalent faculty members of various academic ranks, or salaries; the vector $\underline{g}(t)$ describes the number of full-time equivalent graduate assistants of various ranks, or salary levels; and the vector $\underline{e}(t)$ describes units of various types of environmental facilities, such as classrooms, study areas, closed circuit TV, etc. Specific categories of personnel and environmental facilities are, of course, arbitrarily defined.

All of the inputs are defined in measurable terms in the University model, and are functionally related to the production of course credits, research credits and outside services. All such relationships are of the input-output coefficient type. Specifically, an entry in a parameter matrix, F_1 for example, would specify the number of units of input (full-time equivalent faculty) required to produce a course credit for each of the categories of courses defined in $\underline{c}(t)$. The relationships between all input vectors and output vectors is similarly describable.

In BSTEP, Equation # 4 would describe the production functions for each of the program components. The definitions of inputs and outputs would reflect the uniqueness of BSTEP, but conceptually, the equational format would be the same, so long as linearity between levels of inputs and outputs is determined to be a valid approximation of the production functions.

Among BSTEP inputs, on the personnel side, would be included appropriate categories for Clinic School Teachers for intern consultants, technical support staff, etc. Regarding outputs, BSTEP services would include activities such as the presentation program of evaluation and research results to outside groups.

A non-academic production sector is modeled in a manner similar to that described above for the academic sector. The outputs are defined as all processing, registration and evaluation services, $\underline{p}(t)$; all residential and food services, $r(t)$; and all medical and social services, $\underline{m}(t)$, produced at MSU. The units of these services required are related directly to the number of students. Production functions specify the requirements for personnel and environmental facilities to produce the outputs. The production functions are stated in an input-output format similar to that used in the academic production sector.

In BSTEP, a non-academic production sector could specify processing, registration, evaluation, program development and redevelopment, and similar outputs of the program. The BSTEP model would not, of course, encompass residential, food, medical or social services.

Incorporation of Cost into the Models. Up to this point the University model and the BSTEP version of it have been presented in terms of how they describe the number and distribution of students, the demands placed upon the systems by the students, and the production of the services (academic and non-academic) via input-output formats. By reversing the order of description and assigning dollar values to the initial units of personnel and environmental facilities, the cost of educating particular students can be computed.

In essence, the cost per unit of a BSTEP program component could be derived by combining cost data and the values of the input-output coefficients. If the symbol "$\wedge$" is placed over the vector symbol it represents a cost or value per unit; $\hat{\underline{c}}(t)$ would thus be a vector with entries describing the cost per component of the program for all components of BSTEP. Thus,

$$\begin{bmatrix}\hat{\underline{c}}(t)\\ \hat{\underline{r}}(t)\\ \hat{\underline{o}}(t)\end{bmatrix} = \begin{bmatrix}F_1 & F_2 & F_3\\ G_1 & G_2 & G_3\\ E_1 & E_2 & E_3\end{bmatrix}^T \begin{bmatrix}\hat{\underline{f}}(t)\\ \hat{\underline{g}}(t)\\ \hat{\underline{e}}(t)\end{bmatrix} \qquad \text{Eq \# 5}$$

would be a general form of description of the relationship between the cost of production $\hat{\underline{c}}(t)$, $\hat{\underline{r}}(t)$, $\hat{\underline{o}}(t)$ and the cost of resources $\hat{\underline{f}}(t)$, $\hat{\underline{g}}(t)$, $\hat{\underline{e}}(t)$.

Since $\hat{\underline{c}}(t)$ and $\hat{\underline{r}}(t)$ denote per unit costs of production of course and research credits (in the University model), these costs can be related back to the student receiving the value of these credits. In BSTEP, as explained already, $\hat{\underline{c}}(t)$ could represent the per unit costs of producing the components of the BSTEP program. These costs could be related back to the students receiving the components.

In the University model a value is assumed for each student entering the University -- the value of the student's education up to that point. The entering student value is denoted $\hat{n}(t)$. In BSTEP, the value of entering students would be set equal to zero. This procedure would be consistant with BSTEP benefit/cost analyses which are designed to relate costs of the BSTEP program elements to the benefits derived therefrom.

The value of each student in each category (area-level) can be denoted as $\underline{s}(t)$. By solving a series of equations it can be determined that the value of the students $\hat{\underline{s}}(t)$ could be expressed as

$$\hat{\underline{s}}(t) = Q(t)\hat{\underline{s}}(t-1) + \hat{\underline{a}}(t) - C^{T}\hat{c}(t) - R^{T}\hat{\underline{r}}(t) \qquad \text{Eq \# 6}$$

where Q has entries of $q_{ij}(t) = \dfrac{P_{ij}(t)S_j(t-1)}{S_i(t)}$ and $\hat{a}$ is a vector

elements $\hat{a}_i(t) = \dfrac{a_i(t)\,n(t)}{s_i(t)}\,\hat{s}_i(t-1)$. All other variables are as

previously defined.

Equation # 6 would be used to relate the money invested in a BSTEP student at any point in time as a function of the type and number of program components as computed from the resource allocation policies of BSTEP administrators.

A Further Note on Origins of BSTEP Cost Model. As has already been emphasized, the development of a BSTEP cost accounting model would be based on the four years of on-campus research efforts which have been devoted to elaboration of the MSU/NSF University model. The conceptual problems which were resolved and the hard lessons of practical experience which were learned during the research project would greatly facilitate development of the BSTEP model.

It should also be emphasized that the University model itself has many origins in similar research efforts throughout the country. The MSU/NSF researchers carefully reviewed efforts elsewhere to apply system modeling theory to the environment of the educational institution. A complete listing of the bibliographic underpinnings of the University model is contained in the report A Systems Model for Management, Planning and Resource Allocation in Institutions of Higher Education, published by the Division of Engineering Research at Michigan State University in September 1968.

Technical Features of the BSTEP Evaluation Process

Pre-Testing and Post-Testing. In preceding sections of this chapter the BSTEP evaluative process was described in general terms. It was noted there that an important aspect of the evaluative process involved pre-testing and post-testing of student performance capabilities at the component level of the program.

Prior to beginning a particular component, a pre-test would be administered to determine 1) which students (if any) already have the performance capabilities specified for the component, and 2) which students are lacking which of the specified performance capabilities. Students already performing at the specified criterion level would be credited with completion of the component. The screening out of such students would be an essential prerequisite to determining the incremental contribution of a component to the performance capabilities of students receiving the component. For all students not passing the component pre-test, the results of the pre-test would be used to select the sets of experiences within the component which would be most likely to develop the performance capabilities they are lacking.

A post-test would be administered to determine if a student has achieved the objectives of the component, or requires additional work within the component. If the latter were true, then the student could be recycled through the component to receive an additional set of modular experiences calculated to receive an additional set of modular experiences calculated to enable him to complete the component. Further explication of this process may be found in Chapter 2 of this report.

Student Evaluation of Components. Upon satisfactory completion of a component (as determined by a post-test), each student will assess the individual experiences he participated in within the component in terms of their effectiveness in enabling him to complete the component. For each student and each component, therefore, the following data would be recorded:

1. Pre-test results

2. Post-test results

3. Modules completed within the component

4. Experiences participated in within each module of the component, and

5. Time required to complete each module and the component as a whole

In addition, students would rate each module completed within the component in terms of effectiveness. An appropriate scale, ranging from highly effective to ineffective would be devised for this purpose. Students would also be requested to describe their reasons for assigning particular ratings to each module. During the initial stages of program development, students could describe their reasons on an open-ended basis. The open-ended responses could be analyzed for major categories and key words used. Subsequently, forms could be devised which would list the major, frequently cited categories of response, although room for open-ended responses would still be provided. It might eventually be possible to develop key word in context codings for the more structured response forms, thus allowing a degree of machine processing of student assessments.

Two procedures have elsewhere in this report been described for recording the above data. One procedure employs Goal Cards which list all modules in a component. Passage of each modular objective, as determined either by a pre-test or by a post-test, is recorded on the Card. Comments by the instructor are also included.

The second procedure would involve the use of a computerized information retrieval system. Tests would be scored by and stored in the computer, with modules prescribed for each student identified by individual computer cards. As each module is completed, the appropriate card is used to record the event in the appropriate student's file.

While the computerized system offers many advantages in analyzing pre-test and post-test items, and in compiling data on the program, the cost is considerably greater than that of the hand-marked system. A comparison of the relative benefits of each system will be the subject of one of the evaluative studies. Both procedures are discussed in greater detail in the chapters of this report on Program Development Design, and Information Retrieval, as well as in the Phase I Report.

It may conveniently be recalled at this point that the BSTEP information retrieval system permits data to be assembled from numerous sources for evaluation purposes. Searches of the program may be made by components, by fields such as "Objectives" or Experiences", etc., to examine content and approaches for continuity and balance. Such searches recall and aggregate data from individual modules, permitting comparison among them and within the total program. For example, all modules using simulation as a teaching technique could be located and printed out by designating "simulation" as the key word. Similarly, "observation", "interaction analysis", the "Civil War", "John Dewey" or "discovery" could be the focus of other searches.

Student Characteristics. The description and storage of information on selected student characteristics is an important facet of the BSTEP evaluation process. Initial data would be obtained from university applications, supporting recommendations and documents. Interviews by BSTEP admissions and advisory staff, and other basic student data, have been detailed in Chapter 8. Additional data for describing BSTEP students and individualizing instruction within the program would be collected during the initial Career Decision Seminar. These assessments would include actuarial data, data on commitment to teaching, on perception of teaching, and on personal characteristics, among others. The selection of data to be collected from first-year BSTEP students has evolved from two longitudinal studies of teaching at Michigan State Universities.[5] The data collection devices employed in those studies will form the basic data collecting instruments for BSTEP.

Implementation

The process of BSTEP evaluation was described in the first part of this chapter, and the BSTEP cost analysis system was presented in the second part. The third part of the chapter focussed on BSTEP benefit/cost procedures and a description of salient technical features of both the evaluative process and the cost analysis system. The budget for the manpower and resources required to implement the evaluative process and the development of the BSTEP cost accounting model is prescribed in Chapter 12.

An Evaluation and Research sub-system would be formed within the BSTEP administrative design to implement the evaluative process and the cost analysis system.

The sub-system would be responsible for:

1. Specifying over-all program evaluation procedures

2. Assisting program development teams in the specification of evaluative procedures at the module, component and program area levels

3. Specifying evaluative procedures for internship

4. Specifying evaluative procedures for inter-program evaluation

5. The administration of evaluative procedures at all program levels and phases

6. Testing and development of evaluative procedures at all program levels and phases

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[5] Ann Olmstead, Frank Blackington III, and W. Robert Houston, Socialization of Elementary Teachers (New York: Rinehart and Winston, in press). W. Robert Houston, et al., Internship in Education: A Study of Personal Characteristics and Perceptions of Interns and their Consultants, in press.

7. Coordination of special research activities based on evaluative data

8. Development, testing and implementation of the BSTEP cost accounting model

9. Development, testing and implementation of the data base required for the cost model

10. Execution of BSTEP benefit/cost analyses

SECTION V

BUDGET

Behavioral Science Teacher Education Program

MICHIGAN STATE UNIVERSITY

1969

Chapter 12

ILLUSTRATIVE BUDGET

As described in the preceding chapter, the BSTEP budget is designed to provide more than just fiscal control. In a developmental program-oriented project, the budget should project the developmental and operational costs attributable to each component in the program, and thus provide the basis for the benefit/cost system. A second condition in designing the budget is that it be compatible with University accounting systems.

Traditional budgeting practices simply do not meet the needs of a project like BSTEP. While excellent tools for fiscal control, they are generally incapable of providing systematic information about program components and their interrelationships. Allen Schick provided insight into the essence of each style when he analyzed their origins.

> Performance budgeting derived its ethos and much of its techniques from cost accounting and scientific management; program budgeting has drawn its core ideas from economics and system analysis.[1]

The following description more explicitly compares the two budget characteristics:

Traditional Budgets	A Programmed Budget
Deals only with sources of funds	Focuses on alternative ways to achieve BSTEP goals and objectives
Starts with constraints on receipt and expenditure of funds	Starts with major programs in teaching and research
Only aggregates expenditures on: Administration Teaching and Research Maintenance Student Services pre-supposed	Resource requirements explicitly related to each program and sub-program
Legal and Administrative accounting for funds used	"True" cost of major program elements are shown

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[1] Allen Schick, "The Road to PPB: The Stages of Budget Reform, Public Administration Review 26:4 (December 1966), pp. 243-258.

Traditional Budgets (cont.)	A Programmed Budget (cont.)
Average cost ratios only are available	Marginal and opportunity costs can be computed
Start time periods used only	Deals effectively with long and short time periods
Oriented purely to fiscal matters	Deals with level of activities "produced"

The basic information and resource requirements for each program element can be ascertained, then aggregated in a variety of patterns and expressed in meaningful reports; thus budget decision-makers and project evaluators can assess the relative merit and costs of a number of alternatives. The cost implications derived from this kind of analysis may then be contrasted and compared to determine the expected educational effectiveness of modules as related to stated objectives. In conceptual terms the budget is an expression of; 1) a series of inputs, 2) interrelated analyses of the inputs, resulting in 3) a variety of outputs one of which is the annual budget. By viewing the budgeting process in this manner the degree of subjective influence in the creation of data used for analytical purposes is greatly reduced, and choices are made in light of the fullest possible information concerning their implications. Jack Levine expressed this concern:

> "To use quantitative information in planning and decision-making is not to imply that administrators should rely on nice formula which will determine the course of action that should be followed. Rather it will provide administrators with quantitative information to be balanced against the more subjective aspects involved in guiding an institution of higher learning."[2]

The model for the programmed budget for BSTEP can be conceptualized as in the flowchart in Figure 12:1.

Input-Output Structure

Resource inputs can be classified as personnel or materials which meet the academic demands of students in attaining program

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[2] Jack B. Levine, "A University Planning and Budgeting System incorporating a Microanalytical model of the institution" An unpublished doctoral thesis, Department of Industrial Engineering, University of Toronto, Toronto, Ontario, Canada, 1969.

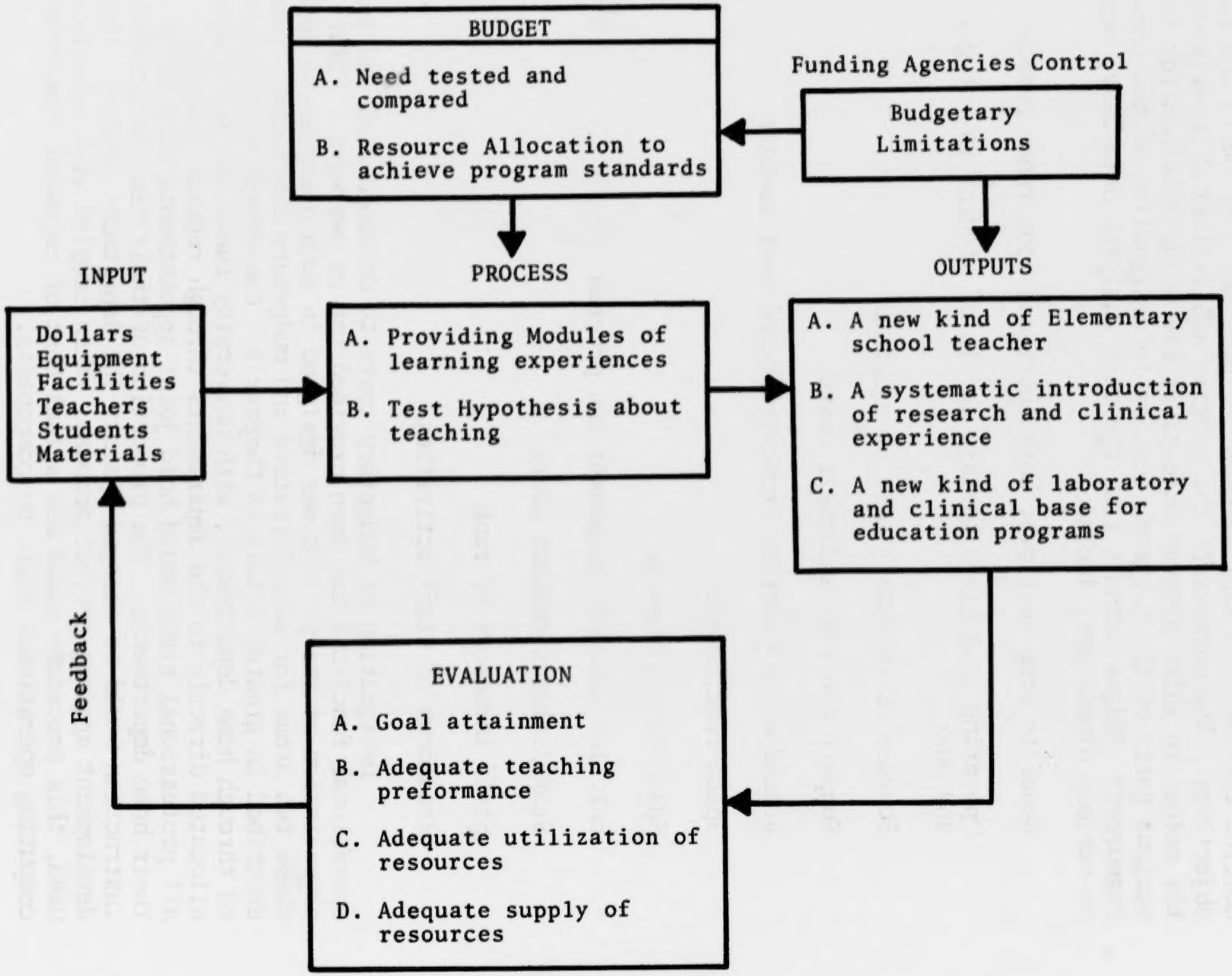
BUDGET
A. Need tested and compared
B. Resource Allocation to achieve program standards
Funding Agencies Control
Budgetary Limitations
INPUT
Dollars
Equipment
Facilities
Teachers
Students
Materials
PROCESS
A. Providing Modules of learning experiences
B. Test Hypothesis about teaching
OUTPUTS
A. A new kind of Elementary school teacher
B. A systematic introduction of research and clinical experience
C. A new kind of laboratory and clinical base for education programs
EVALUATION
A. Goal attainment
B. Adequate teaching preformance
C. Adequate utilization of resources
D. Adequate supply of resources
Feedback

Figure 12:1 Budget Process Mode

objectives. This conceptualization is discussed in greater detail in Chapter 11.

Through the interaction of resources and students, the desired outcomes are expressed in the program, component, and module objectives. The outputs of the program are evaluated to determine the extent to which program objectives are being attained for the various parts of the program, leading to designation of new input resources. Budget outputs from the cost analysis data base, aggregated on various dimensions, include:

Benefits from cost over both short and long range periods

Operating cost given certain levels of student in categories and year

Sources of revenue: cost of programs

Support services and their costs

Breakdown of benefits from structured cost centers

Space requirements

Space making reports

Enrollee load per component and program

Staff/student contact hours

Staff inventory by rank

Breakdown of staff activities

Designation of budgetary costs to developmental and to operational functions has been provided for in two ways. First, the organization of the project was designed in such a way as to separate these two areas for administrative and budgetary functions. This is described in greater detail in Chapter 8. Components would be scheduled through home departments, with university funds for instruction allocated directly to the departments through regular channels. All professional staff would hold joint appointments with BSTEP and their home departments. The proportion of their time designated for instruction would be charged against the department account; that for development against project account. When coupled with materials used, this procedure would use actual cost of expended resources in computing operational costs by components.

A second procedure would employ average costs for courses by departments. These data, which identify student-credit-hour costs for each department in the university, are annually prepared by the

Office of Institutional Research at MSU. This amount could be employed to ascertain the extent of expected university contribution for instruction.

Procedure of Budget Estimate Development

The BSTEP budget is viewed as a quantitative expression of the objectives and program of BSTEP. The first phase of budget projection was completed over a year ago when the basic BSTEP model was designed, with explicit descriptions of program elements. During the current feasibility study, specialists in various fields further considered those modular descriptions, then designated specific human and material resources required during the five-year developmental period. These resources were allocated by 1) initial development, 2) prototype testing, and 3) redevelopment activities for each fiscal year. A summary of their recommendations for program elements is included in Chapters 3 and 4, while other chapters include descriptions of needed support resources.

Program elements were projected for succeeding classes of BSTEP students, and flow charts composed to indicate the timing of development, testing, and redevelopment activities. These were coordinated with a broader planning activity leading to the development of PERT charts for major program areas. PERTing in turn permitted a more reasonable estimate of needed resources. To assist in the most adequate projection of required program resources, program specialists were aided by budget consultants.

Resource costs for the coming five-year period were delineated in a bulletin, Guidelines for BSTEP Program Budgeting.[3] This guide included average faculty and staff salaries for various ranks and grades; and costs of supplies, services, and equipment rental. Each was projected with a built-in five percent per year inflation index. The latter adjustment was to accomodate changing costs in a rising economy.

The resulting budget, then, is predicated on several assumptions:

1. The resource needs identified by program specialists are correct.

2. The cost figures for various resources are accurate.

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[3] This bulletin has been published as a Position Paper; see Olaf Isachsen, Guidelines for BSTEP Program Budgeting

3. The five percent inflation index is a reasonable prediction of the rising economy.

The resource needs were translated by using Resource Allocation sheets, illustrated in Figures 12:2; 12:3 and 12:4. These sheets designated budget needs for Academic Personnel and Support Staff; Supplies; and Specialized Services and Equipment Rental. The fiscal year provided the time dimension for each of the above categories. Many resources were required only part-time for part of the year. A utility factor was employed to estimate the percent of full utilization required while the resource was being employed, while quantity designated the portion of the fiscal year the resource was needed. For other resources, quantity was defined in the more traditional sense as indicating the cardinal-number of required resource units.

From the Resource Allocation sheets, aggregations by catagories and budget classifications were made. These budget summaries are found at the end of this chapter.

In assessing these figures, the reader should keep several factors in mind.

1. The budget includes costs for development, prototype-testing a minimum of three times, and redevelopment at least three times.

2. The program developed is approximately equivalent to 147 of the 180 credits required for graduation.

3. Costs are projected for an entering class of 100 students each year.

Budget Summaries on the following pages are aggregated in two ways. First, resources are classified as Academic Personnel, Support Staff, Supplies, Services and Equipment Rentals. Costs for each classification by Developmental Period are summarized in Table 12:1. This summary table is followed by five tables which further allocate these resources to twelve project areas. (Tables 12:3 - 12:6)

The second categorization is by program area. The twelve areas include: 1) Clinical Experiences, 2) General-Liberal Education, 3) Scholarly Modes of Knowledge, 4) Professional Use of Knowledge, 5) Human Learning, 6) Analysis of Future Societies, 7) Instructional Materials Support System, 8) Faculty Orientation and In-Service Education, 9) Selection and Retention, 10) Administration, 11) Information Retrieval System, 12) Evaluation and Benefit/Cost System. In the first table of this series, total costs for each of these areas are given by Developmental Period (Table 12:2); with twelve supporting tables--one for each area--concluding the budget-breakdown (Tables 12:8 - 12:19).

Task Force:

Period:

Index:

	Quantity	Unit Cost	Total	Utility Factor
Academic Personnel				
Professor				
Assoc. Prof.				
Asst. Prof.				
Sr. Lecturer				
Jr. Lecturer				
Grad Asst. Level I				
Grad Asst. Level II				
Grad Asst. Level III				
Office and Secretarial Help				
Grade:				
Grade:				
Grade:				
Technical Staff				
Transport				

Figure 12:2 Resource Allocation Sheet: Academic Personnel and Staff

Task Force:

Period:

Index:

Transport	Quantity	Unit Cost	Total	Utility Factor
Supplies				
I. Office Supplies				
II. Communication Supplies				
III. Technical Supplies				
Transport				

Figure 12: 3 Resource Allocation Sheet: Supplies

Task Force:

Period:

Index:

	Quantity	Unit Cost	Total	Utility Factor
Transport				
Services				
I. Computer Services				
II. Audio Rentals				
III. Video Rentals				
IV. Motion and Still Picture Rentals				
V. Travel Service				
Transport				

Figure 12:4 Resource Allocation Sheet: Services and Equipment Rentals

Task Force:

Period:

Index:

Transport	Quantity	Unit Cost	Total	Utility Factor
Services (cont.)				
VI. Outside Consultants				
VII. Outside Productions				
VIII. Catering Services				
IX. Car Rentals				
X. Miscellaneous				
Transport				

TABLE 12:1 THE BUDGET

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR--				
		1	2	3	4	TOTAL
ACADEMIC PERSONNEL	245524.00	677452.00	962102.00	964283.00	1004989.00	3854350.00
SUPPORT STAFF	81505.00	163633.00	194511.00	203099.00	215205.00	857953.00
SUPPLIES	26946.00	42865.00	71107.00	67642.00	71464.00	280024.00
SERVICES	55315.00	110084.00	127480.00	132162.00	134717.00	559758.00
EQUIPMENT RENTALS	14396.00	50381.00	87847.00	94450.00	88666.00	335740.00
TOTALS *************************************	423686.00	1044415.00	1443047.00	1461636.00	1515041.00	5887825.00

TABLE 12:2 PROGRAM BUDGET AGGREGATES

	PRE	--IMPLEMENTATION YEAR--				
	IMPLEMENTATION	1	2	3	4	TOTAL
CLINICAL EXPERIENCES	37217.00	154423.00	195165.00	233273.00	267134.00	887212.00
GENERAL LIBERAL EDUCATION	73493.00	190000.00	273554.00	235600.00	217787.00	990434.00
SCHOLARLY MODES OF KNOWLEDGE	12374.00	100504.00	198511.00	159548.00	181937.00	652874.00
PROFESSIONAL USE OF KNOWLEDGE	16369.00	35124.00	112569.00	103360.00	80792.00	348214.00
HUMAN LEARNING	0.00	48047.00	73861.00	97005.00	86860.00	305773.00
ANALYSIS OF FUTURE SOCIETIES	13695.00	23655.00	24730.00	25806.00	27006.00	114892.00
INSTRUCTIONAL MATERIALS SUPPORT SYSTEM	61604.00	140826.00	152844.00	159468.00	166199.00	680941.00
FACULTY ORIENTATION AND IN-SERVICE EDUCATION	34913.00	21362.00	23018.00	24355.00	25216.00	128864.00
SELECTION AND RETENTION OF STUDENTS	28106.00	34533.00	53801.00	74638.00	97016.00	288094.00
ADMINISTRATION	54221.00	110474.00	141616.00	146575.00	153938.00	606824.00
INFORMATION RETRIEVAL SYSTEM	47250.00	89213.00	92820.00	96737.00	100508.00	426528.00
EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM	44444.00	96254.00	100558.00	105271.00	110648.00	457175.00
TOTALS ***	423686.00	1044415.00	1443047.00	1461636.00	1515041.00	5887825.00

TABLE 12:3 ACADEMIC PERSONNEL

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR--				
		1	2	3	4	TOTAL
CLINICAL EXPERIENCES	26478.00	130322.00	158851.00	183773.00	231023.00	740447.00
GENERAL LIBERAL EDUCATION	55939.00	138665.00	200084.00	165484.00	145526.00	705698.00
SCHOLARLY MODES OF KNOWLEDGE	10589.00	73671.00	145951.00	107788.00	130589.00	468588.00
PROFESSIONAL USE OF KNOWLEDGE	12678.00	27398.00	80698.00	72019.00	47627.00	240420.00
HUMAN LEARNING	0.00	38949.00	56255.00	72613.00	63745.00	231562.00
ANALYSIS OF FUTURE SOCIETIES	7772.00	16285.00	17025.00	17766.00	18506.00	77354.00
INSTRUCTIONAL MATERIALS SUPPORT SYSTEM	32100.00	67211.00	70267.00	73321.00	76374.00	319273.00
FACULTY ORIENTATION AND IN-SERVICE EDUCATION	22453.00	10857.00	11350.00	11844.00	12338.00	68842.00
SELECTION AND RETENTION OF STUDENTS	10157.00	29725.00	48731.00	69269.00	91341.00	249223.00
ADMINISTRATION	40122.00	82974.00	108706.00	113431.00	118155.00	463388.00
INFORMATION RETRIEVAL SYSTEM	14777.00	30889.00	32293.00	33697.00	35100.00	146756.00
EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM	12459.00	30506.00	31891.00	33278.00	34665.00	142799.00
TOTALS **************************************	245524.00	677452.00	962102.00	954283.00	1004989.00	3854350.00

TABLE 12:4 SUPPORT STAFF

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
CLINICAL EXPERIENCES	7284.00	8812.00	11668.00	17264.00	20716.00	65744.00
GENERAL LIBERAL EDUCATION	10088.00	20945.00	25447.00	23556.00	25200.00	105236.00
SCHOLARLY MODES OF KNOWLEDGE	0.00	17649.00	22411.00	22411.00	21190.00	83661.00
PROFESSIONAL USE OF KNOWLEDGE	1295.00	2881.00	11211.00	11565.00	12600.00	39552.00
HUMAN LEARNING	0.00	3016.00	7955.00	6718.00	7084.00	24773.00
ANALYSIS OF FUTURE SOCIETIES	5100.00	5610.00	5865.00	6120.00	6375.00	29070.00
INSTRUCTIONAL MATERIALS SUPPORT SYSTEM	20092.00	42306.00	44468.00	46758.00	49210.00	202834.00
FACULTY ORIENTATION AND IN-SERVICE EDUCATION	3544.00	2113.00	2227.00	2355.00	2355.00	12594.00
SELECTION AND RETENTION OF STUDENTS	6177.00	1633.00	1721.00	1820.00	1929.00	13280.00
ADMINISTRATION	8455.00	17845.00	18822.00	19884.00	21060.00	86066.00
INFORMATION RETRIEVAL SYSTEM	10403.00	21772.00	22738.00	23704.00	24670.00	103287.00
EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM	9067.00	19051.00	19978.00	20944.00	22816.00	91856.00
TOTALS **	81505.00	163633.00	194511.00	203099.00	215205.00	857953.00

TABLE 12:5 SUPPLIES

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR--				
		1	2	3	4	TOTAL
CLINICAL EXPERIENCES	2191.00	5163.00	5414.00	2116.00	2579.00	17463.00
GENERAL LIBERAL EDUCATION	1268.00	15225.00	25499.00	25944.00	26571.00	94507.00
SCHOLARLY MODES OF KNOWLEDGE	423.00	2554.00	10636.00	10865.00	11530.00	36008.00
PROFESSIONAL USE OF KNOWLEDGE	620.00	1377.00	7735.00	7083.00	8430.00	25245.00
HUMAN LEARNING	0.00	826.00	1555.00	1734.00	1327.00	5442.00
ANALYSIS OF FUTURE SOCIETIES	53.00	110.00	115.00	120.00	250.00	648.00
INSTRUCTIONAL MATERIALS SUPPORT SYSTEM	1895.00	2571.00	2686.00	2459.00	2230.00	11841.00
FACULTY ORIENTATION AND IN-SERVICE EDUCATION	1707.00	1584.00	1711.00	1843.00	1881.00	8726.00
SELECTION AND RETENTION OF STUDENTS	7752.00	562.00	583.00	606.00	629.00	10132.00
ADMINISTRATION	3281.00	7345.00	9948.00	9660.00	10973.00	41207.00
INFORMATION RETRIEVAL SYSTEM	7311.00	5082.00	4738.00	4704.00	4525.00	26360.00
EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM	445.00	466.00	487.00	508.00	539.00	2445.00
TOTALS **************************************	26946.00	42865.00	71107.00	67642.00	71464.00	280024.00

TABLE 12:6 SERVICES

		--IMPLEMENTATION YEAR--				
	PRE IMPLEMENTATION	1	2	3	4	TOTAL
CLINICAL EXPERIENCES	1264.00	7535.00	11761.00	8520.00	11631.00	40711.00
GENERAL LIBERAL EDUCATION	5184.00	7833.00	9797.00	7248.00	6514.00	36576.00
SCHOLARLY MODES OF KNOWLEDGE	1362.00	5742.00	6684.00	6088.00	4555.00	24431.00
PROFESSIONAL USE OF KNOWLEDGE	1362.00	2569.00	4658.00	4596.00	3667.00	16852.00
HUMAN LEARNING	0.00	4355.00	6410.00	13738.00	12388.00	36891.00
ANALYSIS OF FUTURE SOCIETIES	770.00	1650.00	1725.00	1800.00	1875.00	7820.00
INSTRUCTIONAL MATERIALS SUPPORT SYSTEM	525.00	550.00	575.00	600.00	625.00	2875.00
FACULTY ORIENTATION AND IN-SERVICE EDUCATION	5367.00	5851.00	6728.00	7269.00	7562.00	32777.00
SELECTION AND RETENTION OF STUDENTS	3988.00	2578.00	2730.00	2902.00	3072.00	15270,00
ADMINISTRATION	2363.00	2310.00	4140.00	3600.00	3750.00	16163.00
INFORMATION RETRIEVAL SYSTEM	10657.00	22880.00	24070.00	25260.00	26450.00	109317.00
EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM	22473.00	46231.00	48202.00	50541.00	52628.00	220075.00
TOTALS **************************************	55315.00	110084.00	127480.00	132162.00	134717.00	559758.00

TABLE 12:7 EQUIPMENT RENTALS

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR--				
		1	2	3	4	TOTAL
CLINICAL EXPERIENCES	0.00	2591.00	7471.00	11600.00	1185.00	22847.00
GENERAL LIBERAL EDUCATION	1014.00	7332.00	12727.00	13368.00	13976.00	48417.00
SCHOLARLY MODES OF KNOWLEDGE	0.00	888.00	12829.00	12396.00	14073.00	40186.00
PROFESSIONAL USE OF KNOWLEDGE	414.00	899.00	8267.00	8097.00	8468.00	26145.00
HUMAN LEARNING	0.00	901.00	1686.00	2202.00	2316.00	7105.00
ANALYSIS OF FUTURE SOCIETIES	0.00	0.00	0.00	0.00	0.00	0.00
INSTRUCTIONAL MATERIALS SUPPORT SYSTEM	6992.00	28188.00	34848.00	36330.00	37760.00	144118.00
FACULTY ORIENTATION AND IN-SERVICE EDUCATION	1842.00	957.00	1002.00	1044.00	1080.00	5925.00
SELECTION AND RETENTION OF STUDENTS	32.00	35.00	36.00	41.00	45.00	189.00
ADMINISTRATION	0.00	0.00	0.00	0.00	0.00	0.00
INFORMATION RETRIEVAL SYSTEM	4102.00	8590.00	8981.00	9372.00	9763.00	40808.00
EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS ***	14396.00	50381.00	87847.00	94450.00	88666.00	335740.00

TABLE 12:8 CLINICAL EXPERIENCES

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	26478.00	130322.00	158851.00	193773.00	231023.00	740447.00
SUPPORT STAFF	7284.00	8812.00	11668.00	17264.00	20716.00	65744.00
SUPPLIES	2191.00	5163.00	5414.00	2116.00	2579.00	17463.00
SERVICES	1264.00	7535.00	11761.00	8520.00	11631.00	40711.00
EQUIPMENT RENTALS	0.00	2591.00	7471.00	11600.00	1185.00	22847.00
TOTALS **************************************	37217.00	154423.00	195165.00	233273.00	267134.00	887212.00

TABLE 12:9 GENERAL LIBERAL EDUCATION

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	55939.00	138665.00	200084.00	165484.00	145526.00	705698.00
SUPPORT STAFF	10088.00	20945.00	25447.00	23556.00	25200.00	135236.00
SUPPLIES	1268.00	15225.00	25499.00	25944.00	26571.00	94507.00
SERVICES	5184.00	7833.00	9797.00	7248.00	6514.00	36576.00
EQUIPMENT RENTALS	1014.00	7332.00	12727.00	13368.00	13976.00	48417.00
TOTALS **************************************	73493.00	190000.00	273554.00	235600.00	217787.00	1020434.00

TABLE 12:10 SCHOLARLY MODES OF KNOWLEDGE

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	10589.00	73671.00	145951.00	107788.00	130589.00	468588.00
SUPPORT STAFF	0.00	17649.00	22411.00	22411.00	21190.00	83661.00
SUPPLIES	423.00	2554.00	10636.00	10865.00	11530.00	36008.00
SERVICES	1362.00	5742.00	6684.00	6088.00	4555.00	24431.00
EQUIPMENT RENTALS	0.00	888.00	12829.00	12396.00	14073.00	40186.00
TOTALS **	12374.00	100504.00	198511.00	159548.00	181937.00	652874.00

TABLE 12:11 PROFESSIONAL USE OF KNOWLEDGE

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	12678.00	27398.00	80698.00	72019.00	47627.00	240420.00
SUPPORT STAFF	1295.00	2881.00	11211.00	11565.00	12600.00	39552.00
SUPPLIES	620.00	1377.00	7735.00	4083.00	8430.00	25245.00
SERVICES	1362.00	2569.00	4658.00	4596.00	3667.00	16852.00
EQUIPMENT RENTALS	414.00	899.00	8267.00	8097.00	8468.00	26145.00
TOTALS **	16369.00	35124.00	112569.00	100360.00	80792.00	348214.00

TABLE 12:12 HUMAN LEARNING

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR--				
		1	2	3	4	TOTAL
ACADEMIC PERSONNEL	0.00	38949.00	56255.00	72613.00	63745.00	231562.00
SUPPORT STAFF	0.00	3016.00	7955.00	6718.00	7084.00	24773.00
SUPPLIES	0.00	826.00	1555.00	1734.00	1327.00	5442.00
SERVICES	0.00	4355.00	6410.00	13738.00	12388.00	36891.00
EQUIPMENT RENTALS	0.00	901.00	1686.00	2202.00	2316.00	7105.00
TOTALS ***	0.00	48047.00	73861.00	97005.00	86860.00	305773.00

TABLE 12:13 ANALYSIS OF FUTURE SOCIETIES

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR--				
		1	2	3	4	TOTAL
ACADEMIC PERSONNEL	7772.00	16285.00	17025.00	17766.00	18506.00	77354.00
SUPPORT STAFF	5100.00	5610.00	5865.00	6120.00	6375.00	29070.00
SUPPLIES	53.00	110.00	115.00	120.00	250.00	648.00
SERVICES	770.00	1650.00	1725.00	1800.00	1875.00	7820.00
EQUIPMENT RENTALS	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS ***	13695.00	23655.00	24730.00	25806.00	27006.00	114892.00

TABLE 12:14 INSTRUCTIONAL MATERIALS SUPPORT SYSTEM

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	32100.00	67211.00	70267.00	73321.00	76374.00	319273.00
SUPPORT STAFF	20092.00	42306.00	44468.00	46758.00	49210.00	202834.00
SUPPLIES	1895.00	2571.00	2686.00	2459.00	2230.00	11841.00
SERVICES	525.00	550.00	575.00	600.00	625.00	2875.00
EQUIPMENT RENTALS	6992.00	28188.00	34848.00	36330.00	37760.00	144118.00
TOTALS **	61604.00	140826.00	152844.00	159468.00	166199.00	680941.00

TABLE 12:15 FACULTY ORIENTATION AND IN-SERVICE EDUCATION

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	22453.00	10857.00	11350.00	11844.00	12338.00	68842.00
SUPPORT STAFF	3544.00	2113.00	2227.00	2355.00	2355.00	12594.00
SUPPLIES	1707.00	1584.00	1711.00	1843.00	1881.00	8726.00
SERVICES	5367.00	5851.00	6728.00	7269.00	7562.00	32777.00
EQUIPMENT RENTALS	1842.00	957.00	1002.00	1044.00	1080.00	5925.00
TOTALS **	34913.00	21362.00	23018.00	24355.00	25216.00	128864.00

TABLE 12:16 SELECTION AND RETENTION OF STUDENTS

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	10157.00	29725.00	48731.00	69269.00	91341.00	249223.00
SUPPORT STAFF	6177.00	1633.00	1721.00	1820.00	1929.00	13280.00
SUPPLIES	7752.00	562.00	583.00	606.00	629.00	10132.00
SERVICES	3988.00	2578.00	2730.00	2902.00	3072.00	15270.00
EQUIPMENT RENTALS	32.00	35.00	36.00	41.00	45.00	189.00
TOTALS **	28106.00	34533.00	53801.00	74638.00	97016.00	288094.00

TABLE 12:17 ADMINISTRATION

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	40122.00	82974.00	108706.00	113431.00	118155.00	463388.00
SUPPORT STAFF	8455.00	17845.00	18822.00	19884.00	21060.00	86066.00
SUPPLIES	3281.00	7345.00	9948.00	9660.00	10373.00	41207.00
SERVICES	2363.00	2310.00	4140.00	3600.00	3750.00	16163.00
EQUIPMENT RENTALS	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS **	54221.00	110474.00	141616.00	146575.00	153338.00	606824.00

TABLE 12:18 INFORMATION RETRIEVAL SYSTEM

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	14777.00	30889.00	32293.00	33697.00	35100.00	146756.00
SUPPORT STAFF	10403.00	21772.00	22738.00	23704.00	24670.00	103287.00
SUPPLIES	7311.00	5082.00	4738.00	4704.00	4525.00	26360.00
SERVICES	40657.00	22880.00	24070.00	25260.00	26450.00	109317.00
EQUIPMENT RENTALS	4102.00	8590.00	8981.00	9372.00	9763.00	40808.00
TOTALS **	77250.00	89213.00	92820.00	96737.00	100508.00	426528.00

TABLE 12:19 EVALUATION AND BENEFIT/COST ANALYSIS SYSTEM

	PRE IMPLEMENTATION	--IMPLEMENTATION YEAR-- 1	2	3	4	TOTAL
ACADEMIC PERSONNEL	12459.00	30506.00	31891.00	33278.00	34665.00	142799.00
SUPPORT STAFF	9067.00	19051.00	19978.00	20944.00	22816.00	91856.00
SUPPLIES	445.00	466.00	487.00	508.00	539.00	2445.00
SERVICES	22473.00	46231.00	48202.00	53541.00	52628.00	220075.00
EQUIPMENT RENTALS	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS **	44444.00	96254.00	100558.00	108271.00	110648.00	457175.00

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